MARCH, 1957

Construction Methods AND EQUIPMENT

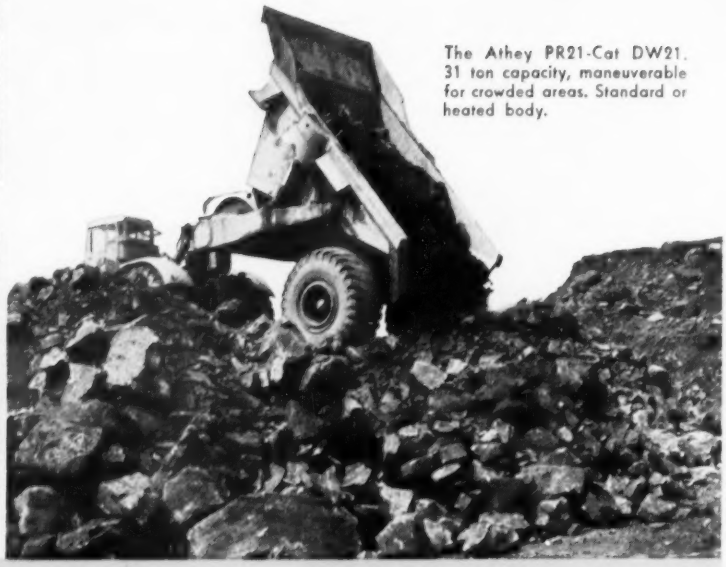
A McGRAW-HILL PUBLICATION • FIFTY CENTS

In California, workman adjusts sectional-frame shoring to support forms for 9½-in. slab . . . p. 2

CONTENTS, PAGE 4

The Athey PR20-Cat DW20. Capacity 22.5 cu. yds. Speeds up to 32.1 MPH for high-speed hauling.

The Athey PR15-Cat DW15. Hauls 22 tons of rock or other material at speeds to 31.3 MPH.



The Athey PR21-Cat DW21. 31 ton capacity, maneuverable for crowded areas. Standard or heated body.

ATHEY OFFERS YOU

the only COMPLETE and PROVED Trailer Line

The new Athey Hydraulic Ejection Trailer. Handles sticky, hard-to-discharge materials, controls dumping, spreads load at dump.

The Athey PD20-Cat DW20. Dumps on the go, speeds long haul jobs, capacity 31 tons at speeds up to 25.1 MPH.

For tough rock and earth jobs...

Whether it's big rock — gumbo clay — ore, mud or earth you have to move, there's an Athey Trailer to answer your material hauling problems. Athey is the leader in the trailer field and offers the only *complete* line of sizes and types of high-speed material handling trailers.

Each unit is built to rigid standards of quality construction that mean long life and low upkeep. Proven Athey design features are setting the pace for faster dumping, greater maneuverability, easier loading and higher production.

Select the exact size and features to gear your job for highest output. Depend on quality-built Athey Trailers powered by Caterpillar Wheel-Type Tractors. Ask your Athey-Caterpillar Dealer for information on "the complete line" today, or write direct to us. Athey Products Corporation, 5631 West 65th Street, Chicago 38, Illinois.

Athey

THE *Complete* TRAILER LINE... *by the Leader*

B.F.Goodrich

All-Nylon Super Traction tires work 5,000 hours, can still be retreaded

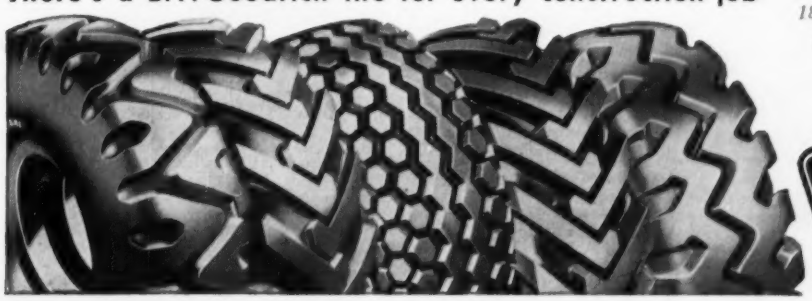
NORTHERN IMPROVEMENT CO. operates 95 vehicles in heavy highway construction work in North and South Dakota, Minnesota and Montana. The scraper above, when loaded, weighs 35 tons, works 60 to 72 hours a week on dirt and gravel roads or no roads at all.

Even under these rugged conditions, B.F.Goodrich *all-nylon* Super Traction tires give 5,000 hours' service before retreading, then give an additional 70% of new-tread service on one retread! One reason for such an exceptional record is the B.F.Goodrich *all-nylon* cord body. Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. The *all-nylon* Super Traction body outwears even the extra-thick tread, *can still be retreaded—often over and over.*

B.F.Goodrich builds the Super Traction tread with thick, widely spaced cleats that take a big bite into the soil, give you positive traction. Yet the extra-wide tread gives greater flotation in soft going. Work goes faster—you save money.

Your B.F.Goodrich dealer has a complete line of tires (left) for all types of off-the-road work. And he offers expert, on-the-job tire service. See him today or write: *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

There's a B.F. Goodrich tire for every construction job

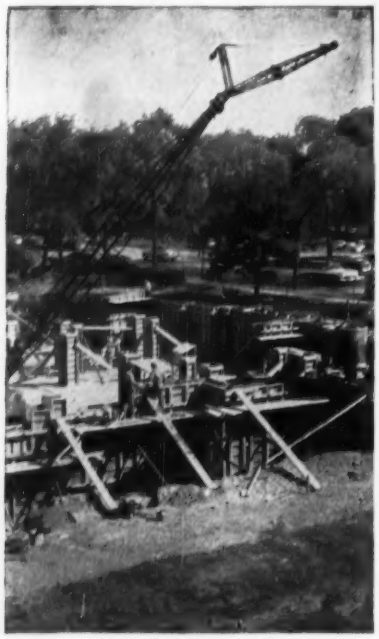


Specify B.F.Goodrich tires when ordering new equipment

B.F.Goodrich
FIRST IN RUBBER

Your B.F.Goodrich dealer is listed under Tires in the Yellow Pages of your phone book

Symons FIELD REPORT...



Contractor Pours 200 Yds. Concrete in One Day with SYMONS FORMS

17,500 square feet of Symons Forms with steel cross members were used to form curved walls, large pilasters and stepped footings on the new addition to St. Scholastica School in Chicago. Walls varied in thickness from 18 to 20 inches and in height from 9 to 10 feet. During one shift, from 8:00 a.m. to 4:30 p.m., the contractor was able to pour 200 yards of concrete. Overall size of the project is 190 x 190 and estimated cost is in excess of $1,000,000.

Symons engineers and sales representatives can show you how Symons Forms solve many specific forming problems. For example, from your plans our engineers will prepare a complete form layout and cost sheets—no charge or obligation. Also, Symons salesmen are competent to advise your work crews on most efficient, cost-saving methods of form erection and stripping.

Forms may be rented with purchase option.

Symons Clamp & Mfg. Co., 4255 Diversey Avenue, Dept. C-7, Chicago 39, Ill.

Fred Berglund & Son, Inc., Chicago, Illinois, general contractor for St. Scholastica School job.

Catalogs and Added Information on FORMS—CLAMPS—SHORES Sent on Request

Construction Methods AND EQUIPMENT

VOLUME 39

NUMBER 3

ESTABLISHED 1919

March, 1957

Publisher ROBERT F. BOGER

Editor HENRY T. PEREZ

Managing Editor ROSS HAZELTINE

Associate Editors
New York: ALBERT C. SMITH
ANDREW BORACCI
San Francisco: L. L. WISE
Washington: V. B. SMITH

Assistant Editor
New York: FRANK W. CORRIGAN

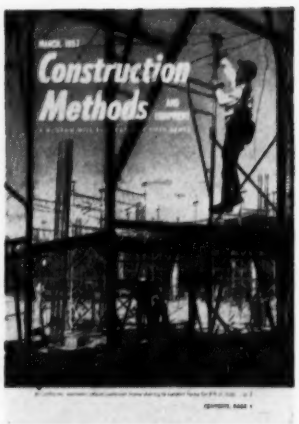
Presentation Editor
JOSEPH J. FRIES
Assistant: DOLORES MULLIGAN

Editorial Secretary
PEGGY HAMILL

Business News
Manager: ELSIE EAVES
Editor: JAMES H. WEBBER

Domestic News Bureaus:
ATLANTA • CLEVELAND
DETROIT • DALLAS
LOS ANGELES • SAN FRANCISCO
WASHINGTON

Foreign News Bureaus:
LONDON • PARIS • BONN
MEXICO CITY • RIO DE JANEIRO
TOKYO • BEIRUT



On the Cover

W. J. Moran Co. of Alhambra, Calif., has 3,600 of Patent Scaffolding's Trouble Saver sectional shoring frames on a warehouse construction job for Emporium-Capwell Co. in Oakland, Calif. The building is 525x225 ft with bays approximately 25x25 ft between drop heads. Moran shored about 60% of the square footage at one time. A rubber-tired hydraulic dolly (center of photo) moves three-frame units. Photo shows a workman making an adjustment to the U-head atop an inverted extension leg before installation of the stringers.

Member ABP

Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder.

Editorial, Executive and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising Sales; A. R. Venezian, Vice-President and Circulation Coordinator.

Subscriptions: Address correspondence to Construction Methods and Equipment—Subscription Service, 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address. Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders.

Single copies 50¢. Subscription rates—United States and possessions $3.00 a year; $4.00 for two years; $5.00 for three years. Canada $4.00 a year; $6.00 for two years; $8.00 for three years. Other Western Hemisphere and the Philippines $10.00 a year; $16.00 for two years; $20.00 for three years. All other countries $15.00 a year; $25.00 for two years; $30.00 for three years. Second class mail privileges authorized at New York, N. Y. Printed in U.S.A.

©Copyright 1957 by McGraw-Hill Publishing Co., Inc.—All rights Reserved.

DRAGLINE ROPE-DERRICK R
SLINGS-CLAMSHELL ROPE-S
SCRAPER ROPE-BOOM GUYS
CLAMSHE RANE RO
GUYS-SI DOZER
WAY EXC -DRAG
DERRICK APER RO
CABLE WAY EXCAVATOR ROPE
OPE-SLINGS
CRANE ROPE
SHOVEL ROPE
BOOM GUYS
DOZER ROPE

WHYTE STRAND

wire ropes are made to meet the needs of today's high output machines. There is a WHYTE STRAND wire rope in the correct size and construction for each use on all your machines. These Macwhyte ropes are PREformed for maximum flexibility, internally lubricated for super service, and stocked for immediate delivery.

Don't guess at the correct specification of wire rope for your machines. Ask for "Correct Wire Rope" Bulletin No. 5702.

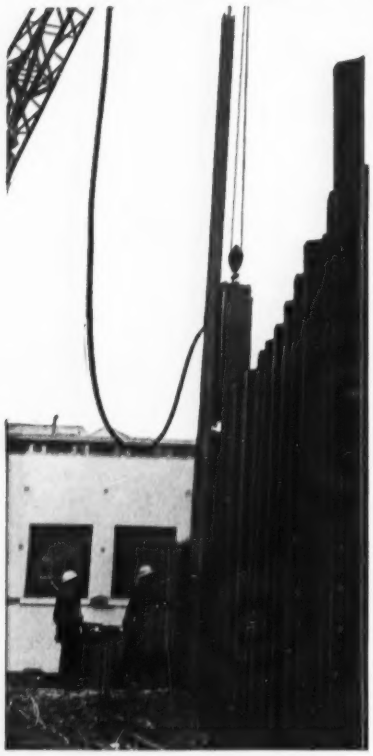
MACWHYTE COMPANY
2906 Fourteenth Avenue, Kenosha, Wisconsin
Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs available.

MILL DEPOTS: **New York 4,** 35 Water St. • **Pittsburgh 19,** 704 Second Ave. • **Detroit 3,** 75 Oakman Blvd. **Chicago 6,** 228 S. Desplaines St. • **St. Paul 14,** 2356 Hampden Ave. • **Ft. Worth 1,** P.O. Box 605 • **Portland 9,** 1603 N.W. 14th Ave. • **Seattle 4,** 87 Holgate St. • **San Francisco 7,** 188 King St. • **Los Angeles 21,** 2035 Sacramento St.

§ 110-6

At 3 P.M....

CAVE-IN!



Cave-ins will happen, through no fault of the contractor. On this excavation job, there was erratic soil behavior, shifting loads, saturating rain . . . everything unpredictable.

When it happened, L. B. Foster Co. was called at 3 P.M. for rental steel-sheet piling *in a rush*. We cut MP-116 piling in our yard, and delivered it in Foster trucks to the job site 400 miles away before the crews started work next morning.

This is typical of the dependable help contractors can expect . . . and get . . . with Foster's Piling Rental Plan. Always the exact length and exact section . . . when you need it . . . on low fixed cost. Call your nearest Foster office for quotations—find out for yourself the real savings in Renting Piling from Foster.

STEEL-SHEET PILING • PIPE-FOR-PILING
H-BEARING PILE • LIGHT WEIGHT PILING
RAILS • TRACK EQUIPMENT
PIPE • PIPE FABRICATION

L. B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

Pay Dirt in This Issue

Conveyor Moves a Mountain 60
Giant conveyor system delivers an average of 4,200 tons of gravel per hr for causeway across Great Salt Lake.

Cellular Boxes Sunk for Breakwater 65
Huge concrete boxes built at a pier by slipform methods are towed to sea and sunk in place near Genoa, Italy.

Unique Shield Tunnels Sand 66
In California, as much as 153 ft of 11-ft horseshoe bore tunnel is driven through soft material in a 24-hr period.

Concrete Meets Challenges on Building Job 74
Multi-million-dollar factory building in Lexington, Ky., is a showcase of all types of concrete construction.

Contractor-Built Rigs Handle Sand Fast 90
Loading machine fills 22-yd haul unit in 33 to 38 sec. Unloader empties it in 33 to 45, flings sand 70 ft away.

Record Lift Slab Weighs 1,466 Tons 102
A first in lift-slab construction takes place in Lyndhurst, N.J., where the largest lift slab on record is raised.

It's Tough to Build on a Swamp 117
Two long runways are built on marshy land in the Mississippi River Delta. Fill is dredged from the river.

Air Jacks Lift Slip Forms 132
Air and water combine to speed slip form construction of 260 concrete silos at Calumet Harbor south of Chicago.

Floating Slide Lays Corrugated Outfall 156
A 200-ft slide hung from the side of a scow places a 6,500-ft metal pipeline in New Jersey's Raritan Bay.

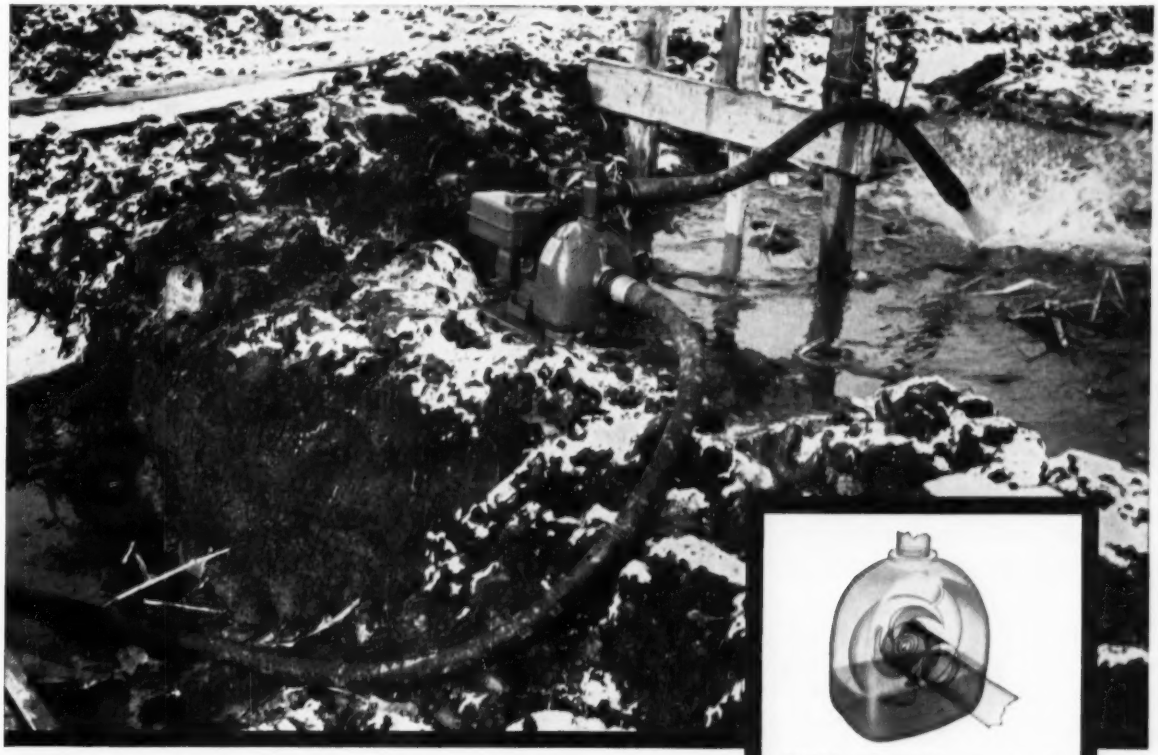
Aluminum Dome Raised in Two Shifts 170
A frameless dome made of lightweight aluminum panels is erected in 20 hr. Special bolts lock hydraulically.

Producing Aggregates 195
Eighth article of this CM&E series expands on the functional design of the modern-day stationary aggregates plant.

Construction News from Washington 13
Job Talk 20
It's Your Business 28
Picture of the Month 41
Construction News in Pictures 45
Construction 'Round the World 51
Editorial 59
Trench Bracing Speeds Pipe Laying 111
Train the Unskilled, Speakers Say 125
How to Load Scrapers 141
Concreting Goes on All Winter 178
New Form Eliminates Wales 187
McGraw-Hill Editorial 227
Construction Men in the News 231
The Maintenance Shop 239
Sales and Service 246
Construction Equipment News 252
Methods Memo 312

NEXT MONTH Drilled-in-place caissons solve the problem of building a foundation for Caterpillar Tractor Co.'s new parts plant at Morton, Ill. Method eliminates need to lower high water table and permits setting foundation on clay.

See the New Gorman-Rupp "80 Series" Pumps at Your Nearest Distributor!



SHOW STEALER!

At A. R. B. A. and on the job, too!

Here's an exciting new line of Gorman-Rupp centrifugal pumps that prime... with important features never before offered to pump users. Straight-in suction! No check valve! These pumps never fail, never quit. Nor will solids foul them*.

The new Gorman-Rupp design delivers pumped liquid direct to the eye of the impeller, increasing capacity, efficiency and lift. Simpler. Lighter in weight. Fewer parts. Now available in sizes 1½", 2" and 3".

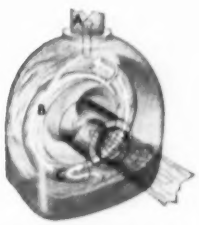
You saw them at the Road Show!

THE GORMAN-RUPP COMPANY

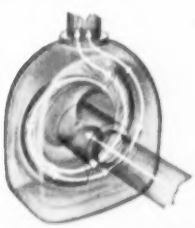
305 Bowman Street • Mansfield, Ohio

*Provided standard equipment supplied with pump is used.

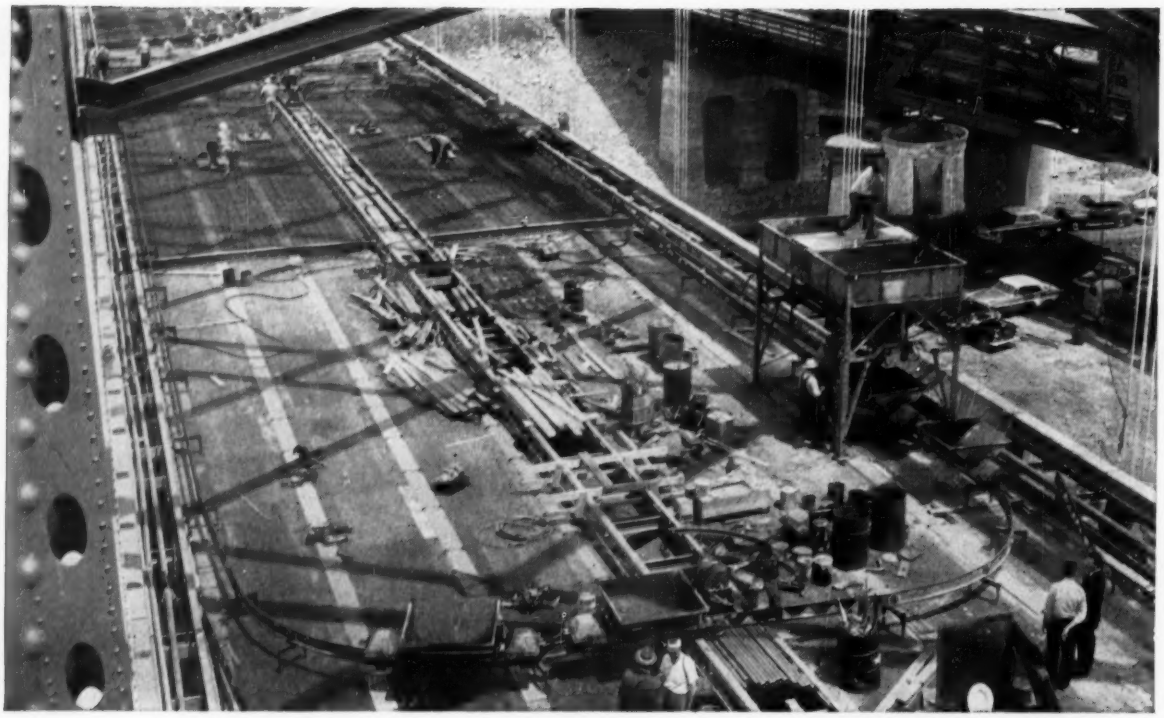
PUMP AT REST—Captured liquid retained for priming. Note absence of the usual check valve.



PRIMING ACTION—Entrained air (B) escapes at (A) to be discharged. Priming liquid returns (C) to entrain more air.



PUMPING ACTION—Straight-in suction voids entrance restrictions. Water enters direct to the eye of the impeller.



Thirty yards an hour around the loop.

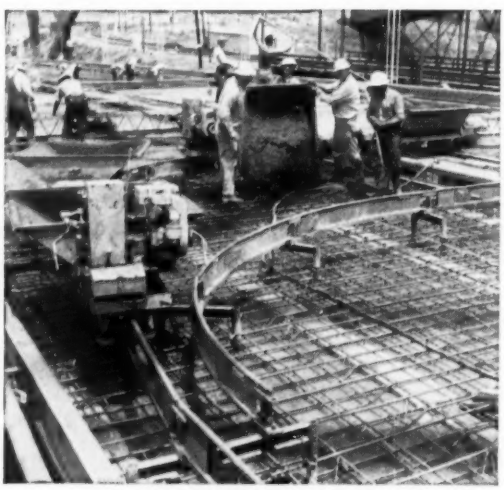
TOLL BRIDGE FAR AHEAD OF SCHEDULE WITH REX RAILPORTER

The deck of the new Kansas City toll bridge is being poured with the aid of CHAIN Belt's new Rex Railporter...and because of this revolutionary new method of concrete transportation and placement, the bridge may be done weeks ahead of schedule! A terrific saving in time and earlier toll revenue.

The Rex Railporter, a portable construction materials transport, whisks along with a 20-cubic-foot load of concrete down its single rail from loading bin to pour site faster than you can say "Missouribridgekansascity." The Rex Railporter runs unattended and stops automatically. Two men can easily lay 100 feet of track in less than 20 minutes.

The J. A. Tobin Construction Company, using three Railporters with trailer units on an oval track, pours about 30 yards an hour . . . the same pouring rate would require a fleet of power buggies.

If you have a concrete placement or materials transportation job over reinforcements, open cuts, muddy terrain, excavations or water...investigate the Rex Railporter at your Rex Distributor or write for Bulletin No. 56-47, CHAIN Belt Company, 4664 W. Greenfield Avenue, Milwaukee 1, Wis.



Another rail is ready as the pour approaches.

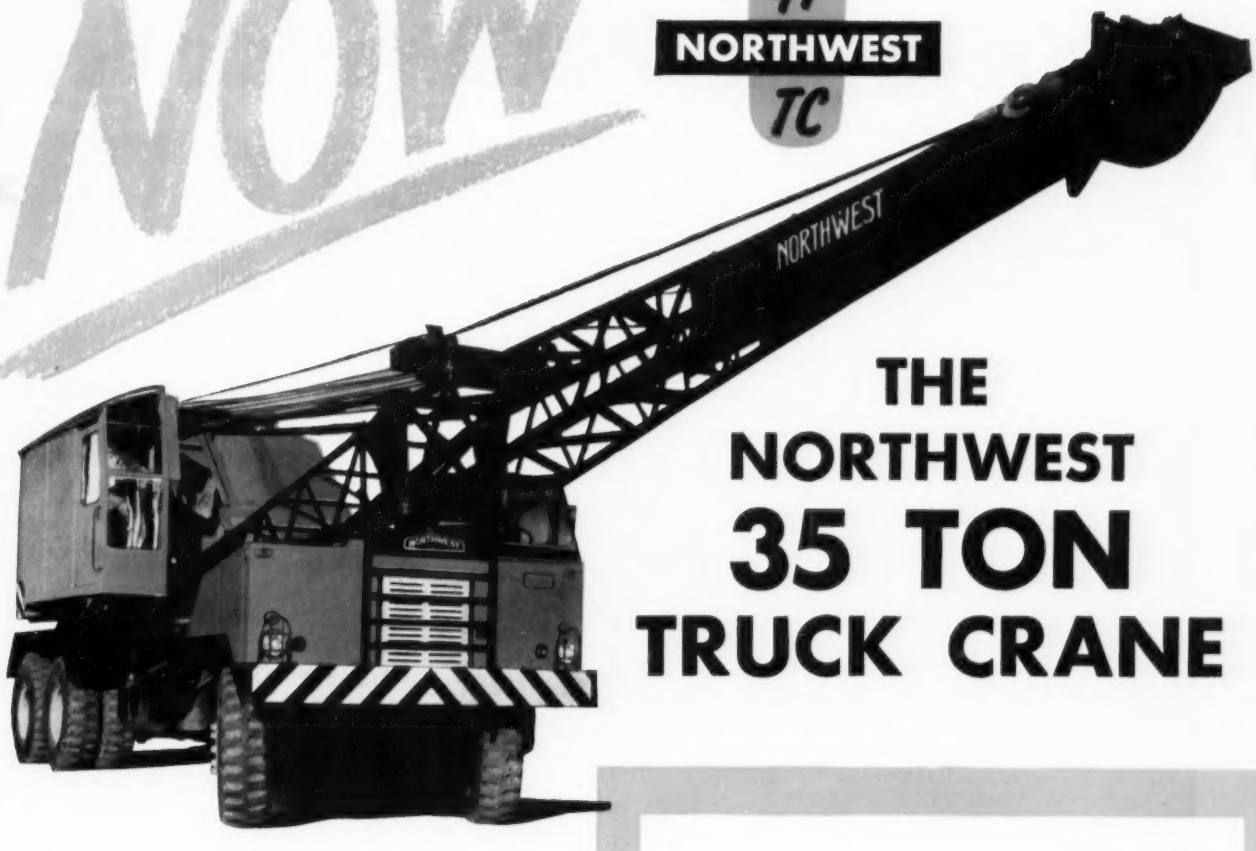
REX CHAIN BELT COMPANY

MOTO-MIXERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER • PUMPS

SPREADERS • PAVERS • FINISHERS • FORMS

NOW

41 NORTHWEST TC



THE NORTHWEST 35 TON TRUCK CRANE

A NEW NORTHWEST TRUCK CRANE—the 41 TC makes possible the selection of just the right Northwest machine on rubber to suit your job.

Here is a unit that, like all Northwests, is aimed at producing the maximum results profitably, steadily and at minimum cost. The 41 TC brings you all of the proved Northwest advantages—advantages that have made money for Northwest owners. And, it brings you more!—New features that you will be interested in finding out about.

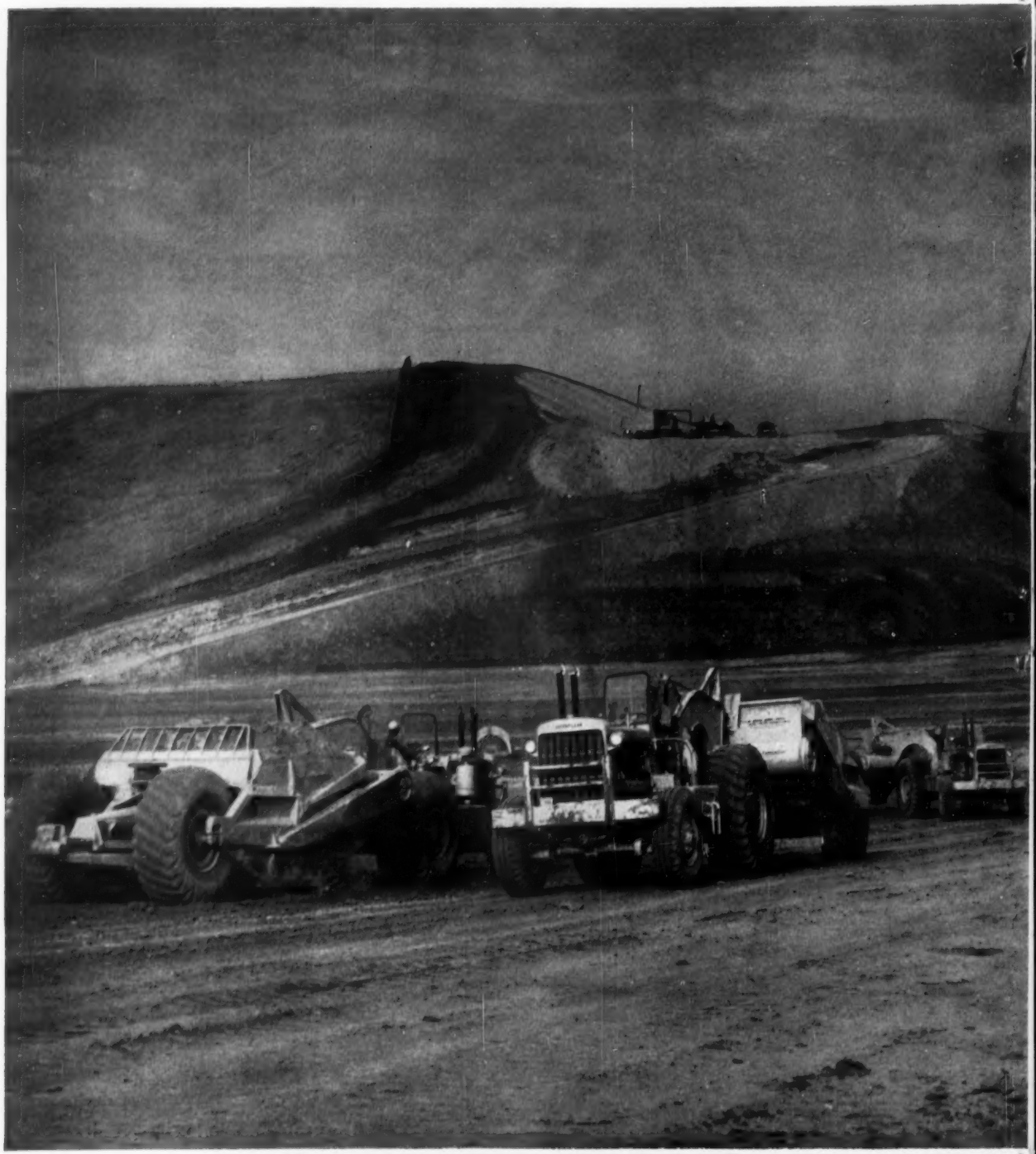
If you need a Truck Crane get full details on Northwests on rubber—Available in 25-ton and 35-ton capacities. Ask a Northwest Man for full details.

NORTHWEST ENGINEERING COMPANY
1503 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

NORTHWEST

THE GREATEST COMBINATION OF PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE, DRAGLINE OR PULLSHOVEL

"We're moving 30,000 yards a day—



TUNE IN:
METROPOLITAN
OPERA
radio broadcasts
every Saturday afternoon

TEXACO

TEXACO

and that Texaco Plan certainly helps"

Part of M-W & W's equipment task force that includes 29 scrapers and 20 dozers at work on 1.75-million-yard cut being made at a 30,000-yard-a-day rate. All equipment is 100% Texaco-lubricated and fueled.

—says Project Manager Floyd Helm

Mr. Helm heads all field work for this joint venture of McCammon-Wunderlich Co. and Wunderlich Contracting Company. *The job:* construction of 4.9 miles of highway (relocated U.S. 40)—part of the approaches to new bridge across Carquinez Straits, California. All equipment is 100% Texaco-lubricated and fueled.

"Toughest part of this job," says Mr. Helm, "is a 1.75 million-yard cut. We're trying to keep blasting to a minimum and our rippers and scrapers really have a rough assignment. We're moving some 30,000 cubic yards per one-shift day and we couldn't do that if our equipment wasn't staying right on the job. That Texaco Simplified Lubrication Plan certainly helps. Our maintenance crew can handle all major lubrication with only six lubricants—no waste motion, no mistakes—and those Texaco Lubricants really stand up. We haven't had a single equipment failure due to lubrication."

THE SIX LUBRICANTS THAT M-W & W USE

For engine lubrication: *Texaco Ursa Oil Super Duty Special*—especially refined and processed to make engines deliver more power with less fuel over longer periods between overhauls.

For chassis and general grease lubrication: *Texaco Marfak*—stays in the bearings and gives long lasting, extra protection against wear and rust.

For wheel bearings: *Texaco Marfak Heavy Duty*—seals itself in, seals out dirt and moisture, requires no seasonal change.

For hydraulic units: *Texaco Regal Oil R&O*—keeps systems free from sludge, rust and foam.

For wire rope and open gears: *Texaco Crater*—keeps rope strong longer, assures smoother operation and longer gear life.

For enclosed reduction gears: *Texaco Gear Lube HD*—protects against wear under heavy loads, keeps gears running smoothly.

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your projects. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N.Y.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

For the first time... an all-purpose hydraulic "QUICK-WAY"®

EXTRA!
NOW! A SENSATIONAL NEW MONEY-MAKER BY "QUICK-WAY"

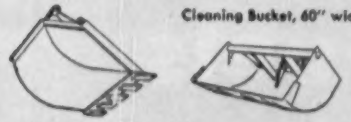
CHORE-MASTER
patents pending

The new "QUICK-WAY" Chore-Master is the first interchangeable hydraulic grading-digging attachment that makes dozens of jobs possible with one attachment. Now with the new Chore-Master, five crane shovel models, and the most complete standard line of attachments, "QUICK-WAY" is the most versatile machine you can own.

Two large hydraulic cylinders and one hydraulic motor operate the reaching, digging and swivel action of the boom and bucket. A single control lever guides all these action: with a simple twist of the wrist for sure, precision, hydraulic control.

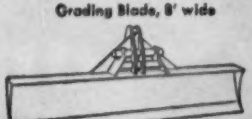
This new attachment can be changed quickly to any of the other "QUICK-WAY" standard attachments.

Radius of boom retracted (open bucket)	21'3"
Radius of boom extended (open bucket)	33'3"
Maximum boom angle (up and down)	45°
Swivel of bucket (either way)	50°
Bucket open or close	90°


Trenching Bucket, ½ cu. yd.

Cleaning Bucket, 60" wide

Ripper Tooth


Grading Blade, 8' wide

Other Attachments Available

"QUICK-WAY"® TRUCK SHOVEL CO.
A Subsidiary
DENVER, COLORADO

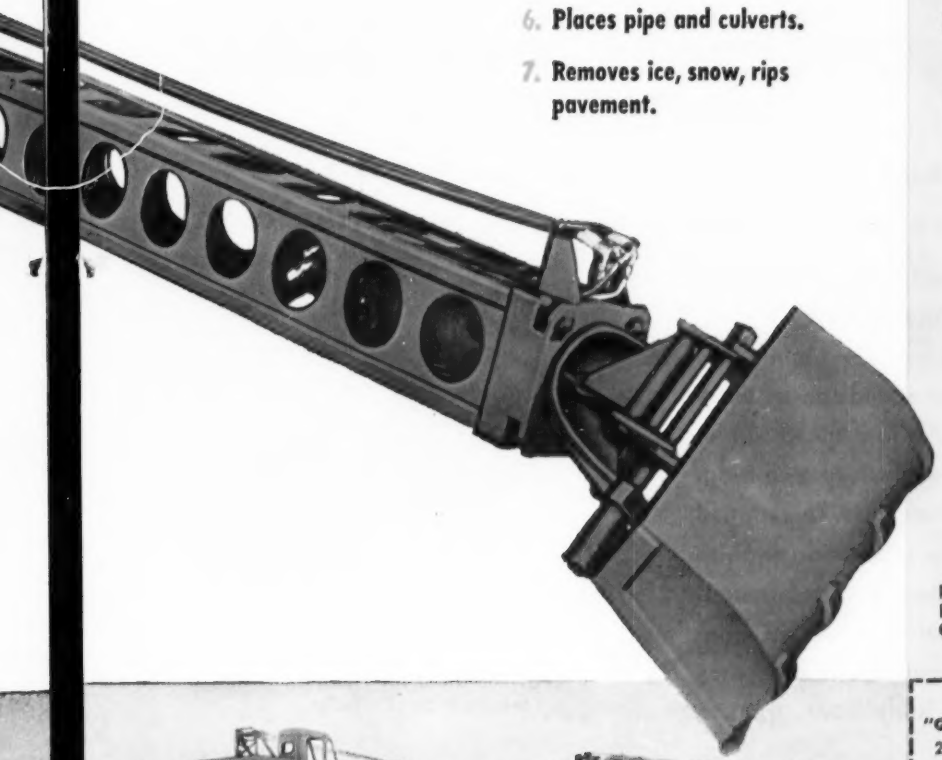
Now!
5
"QUICK-WAY" MODELS
with more BIG SHOVEL features

attachment for crane shovels! **THE NEW**

CHORE-MASTER!

JUST LOOK AT THE JOBS YOU CAN DO WITH "QUICK-WAY" CHORE-MASTER

1. Excavates in close quarters.
2. Reaches under buildings, obstructions, bridges.
3. Precision digs around foundations, culverts, tanks.
4. Precision grades and slopes roadsides.
5. Digs and cleans trenches and backfills.
6. Places pipe and culverts.
7. Removes ice, snow, rips pavement.



Now a "QUICK-WAY"® is the most versatile machine you can own... with ***MORE ATTACHMENTS*** *to handle* ***MORE KINDS OF JOBS*** *with greater profits:*

CRANE

MAGNET

SHOVEL

DRAGLINE

CHORE-MASTER

CLAMSHELL

PILE DRIVER

TRENCH HOE

In addition Backfiller Blade, Orange Peel, Snatch Block, Concrete Bucket, Skull Cracker, Pulp Wood Grapple and many other special tools.

85A—4/10 yd.—8½ Ton

125A—6/10 yd.—12½ Ton

105A—5/10 yd.—10½ Ton

105AC Crawler—85AC Crawler

"QUICK-WAY" TRUCK SHOVEL CO. Dept. 267
2401 East 40th Ave.,
Denver 5, Colorado, U.S.A.

Please send me the following "QUICK-WAY" catalog:

- ☐ Chore-Master
- ☐ 85A
- ☐ 105A
- ☐ 125A
- ☐ 85AC Crawler
- ☐ 105AC Crawler

Name.....

Title.....

Company.....

Address.....

City and State.....

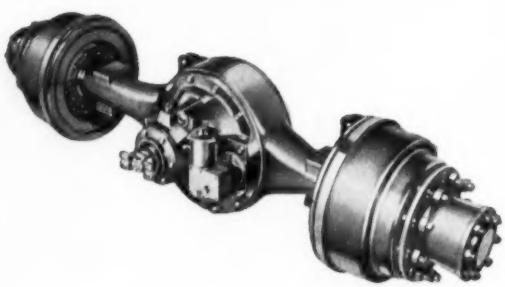
IN EATON 2-SPEED AXLES

REDUCES STRESS AND WEAR

ADDS TO AXLE LIFE • CUTS MAINTENANCE

KEEPS TRUCKS ON THE JOB • LOWERS OPERATING COST

Eaton's exclusive planetary construction distributes gear-tooth loads over four "planet" gears, holding stress and wear on any one gear tooth to a minimum. Completely locked out in the high speed range, these four gears rotate only slowly in the low speed range. The result is quiet operation, easy clash-free shifting, minimum wear, materially longer axle life. This rugged planetary design, plus forced-flow lubrication enables Eaton 2-Speeds to establish outstanding performance records. Eaton 2-Speeds also reduce stress and wear on engines and all power transmitting parts; they make it possible for trucks to haul more, quicker, longer, at lower cost.



More than Two Million
Eaton Axles in Trucks Today.
For complete information,
see your truck dealer.

EATON

AXLE DIVISION

MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Engine Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Hydraulic Pumps Motor Truck Axles • Permanent Mold Gray Iron Castings • Forgings • Heater-Defroster Units • Automotive Air Conditioning Fastening Devices • Cold Drawn Steel • Stampings • Gears • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

Construction News From Washington

Washington, D.C.
March, 1957

No Price Controls Likely

Contractors face further increases in materials prices in the months ahead. But Administration officials have down-graded Pres. Eisenhower's news conference hint of possible government-established price ceilings.

The word is that Eisenhower went "one step too far" in his theorizing about the consequences of rising prices. The trend in prices and wages risks inflation, and the Administration is talking as loudly as it can to discourage further rises. But price controls just aren't in the picture.

The estimate in Washington is that prices of construction materials will go up in the months ahead. The demands of the highway program, of industrial expansion, and commercial building are still high. And, though new capacity is being built, the pressure is expected to continue.

A Break for Subs

Subcontractors will find it easier from now on to get from the Interior Department the names of prime contractors eligible for contract awards. This will give more subs a better chance to participate in construction programs that total about $250 million a year. Interior now will give the names of prospective bidders on prime contracts to any subcontractor who asks for them.

Bureau of Reclamation handles most of the construction done by Interior; it has about 84 projects under construction now, including the huge Upper Colorado River Project.

Up to now, only the contracting officers had the list of prospective bidders. From here on, you can get the names on Bureau of Reclamation files from Assistant Commissioner McClellan at Denver.

Labor-Contractor Deals

Building trades unions are easing up on their demands for Taft-Hartley amendments. Clear indications of this were seen during recent meetings between contractors and the building trades sponsored by Secretary of Labor Mitchell.

Three tentative agreements were reached during the labor-contractor meetings at the Department of Labor.

A modified pre-hire proposal would let NLRB certify a craft union as bargaining agent where the contractor has a history of dealing with the union. Once the NLRB certification was given it could

make agreements with employers before workers are hired for a particular project.

Contractors won union support for legalizing the T-H status of employer associations.

An agreement on permitting apprentice training funds to be an issue in bargaining also was reached.

Jurisdiction Problems Ahead

The AFL-CIO meeting in Miami sharpened up the fight between Reuther of the Auto Workers and the building trades over which should do construction work inside an industrial plant. George Meany, AFL-CIO chief, has a proposal calling for arbitration of disputes; but the building trades are dead set against this.

Another proposal would ban one union's boycott of another's product like some sheetmetal workers locals are now boycotting products made by some steelworkers. The building trades are lining up with the sheetmetal workers.

All in all, the outlook is for more jurisdictional fights rather than less. Dave Beck's teamsters are fanning such arguments as one way of taking the spotlight off the Senate investigation of their union.

Revising Tax Deductions

You may be getting a tax break on depreciation of machinery and equipment soon. The Internal Revenue Service wants to put into effect a revised and updated edition of its "Bulletin F"—the guidebook used by the man who checks your tax return in determining whether you've taken too large deductions for annual depreciation of plant and equipment.

The bulletin gives the tax-life of all kinds of equipment. The present one specifies these, for instance: portable rock crushers, 8 years; bulldozers, 8 years; chain hoists, 6 years; pneumatic riveting hammers, 3 years; and so on.

Idea of the revision is to bring what "Bulletin F" suggests into line with the actual life of equipment and to incorporate into the booklet new equipment that's not now listed.

The Internal Revenue man still will make the decision as to whether your variation from "Bulletin F" is acceptable, but the revision may allow you to write off equipment faster—and get larger deductions—if the particular job you're on actually wears out equipment more rapidly than the ordinary run of jobs.

A committee of private tax experts and tax officials has been appointed to receive suggestions from taxpayers about changes they'd like to see in revised "Bulletin F." Contractors can suggest changes in the present bulletin. Recommendations should be sent to Commissioner of Internal Revenue, Washington 25, D. C., attention T:S:EA:F. The revision will move slowly. Best guess is that it will be 1958 before the new "Bulletin F" is ready.

Heaped loads up to 25 cu. yds. were easily handled in fast time by this DW21-No. 470 Lowbowl Scraper for L. G. Arnold, Inc. Other Caterpillar-built units in the company's line-up include a D9 used as pusher; one non-current DW21; two D8s; two No. 12s; one D6 with tamper; one D7 with Bulldozer and a No. 80 Scraper.

"OUTPRODUCED BY FAR ANY OTHER MACHINES ON THIS JOB"

Phil Dudenhoefer, grade foreman, L. G. Arnold, Inc., Eau Claire, Wisconsin

CAT* Lowbowl Scraper, push loaded by a D9, set the following pace on relocation of U. S. 53, Wisconsin:

1. **Averaged 12 to 15 minutes a trip with heaped loads on a three-mile round-trip haul.**

2. **Loaded sandy gravel in 70 seconds and topsoil in 45 seconds.**

Here's more proof that Caterpillar Lowbowl Scraper design really pays off on the job. The proof comes from F. L. Carr, Vice-President, and Phil Dudenhoefer, grade foreman, of L. G. Arnold, Inc.

Quoting F. L. Carr: "The new DW21 and D9 pusher have more than lived up to all of our expectations. The low-bowl design of the new scraper has even improved the easy loading feature of Caterpillar-built hauling equipment."

Quoting Phil Dudenhoefer: "In my 28 years in this business, I've seen all sorts of earthmoving machines, and Caterpillar beats them all. As grade foreman, I've got both feet right down in the dirt where I observe and record the output and performance of every machine. I'll say this: the DW21 and No. 470 Lowbowl Scraper with the D9 pushing outproduced by far any other machines on this job!"

The job: The relocation of about 10 miles of U. S. 53 between Eau Claire and Chippewa Falls, which involved the handling of 78,059 cu. yd. of borrow (sandy gravel), 42,901 cu. yd. of unclassified and 93,272 cu. yd. of overburden (topsoil). The Caterpillar DW21-No. 470 Lowbowl Scraper (struck capacity 18 cu. yd.), carrying heaped loads up to 25 cu. yd., made four trips an hour on a three-mile round-trip haul. Loading time, with the D9 pushing, averaged 70 seconds for sandy gravel and 45 seconds for topsoil.

On job after job, under varying conditions, the Cat Lowbowl Scraper is showing its heels to other earthmovers. Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you *facts* and *figures* comparing its performance with other units.

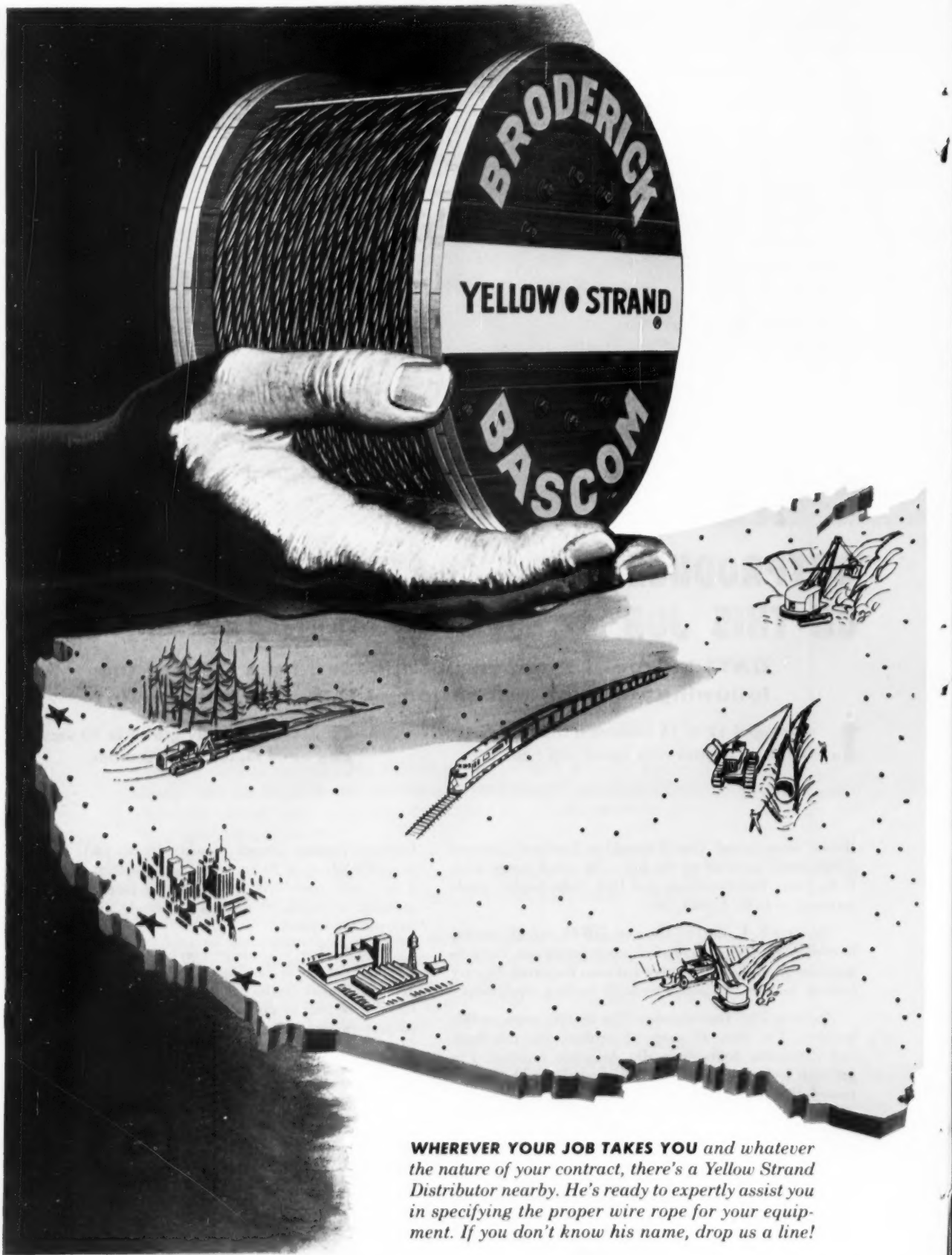
For *proof* that it will pay you to put DW21-No. 470 Lowbowl Scrapers on your job, see him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED— THE HARD WORK



WHEREVER YOUR JOB TAKES YOU *and whatever the nature of your contract, there's a Yellow Strand Distributor nearby. He's ready to expertly assist you in specifying the proper wire rope for your equipment. If you don't know his name, drop us a line!*

Yellow Strand®

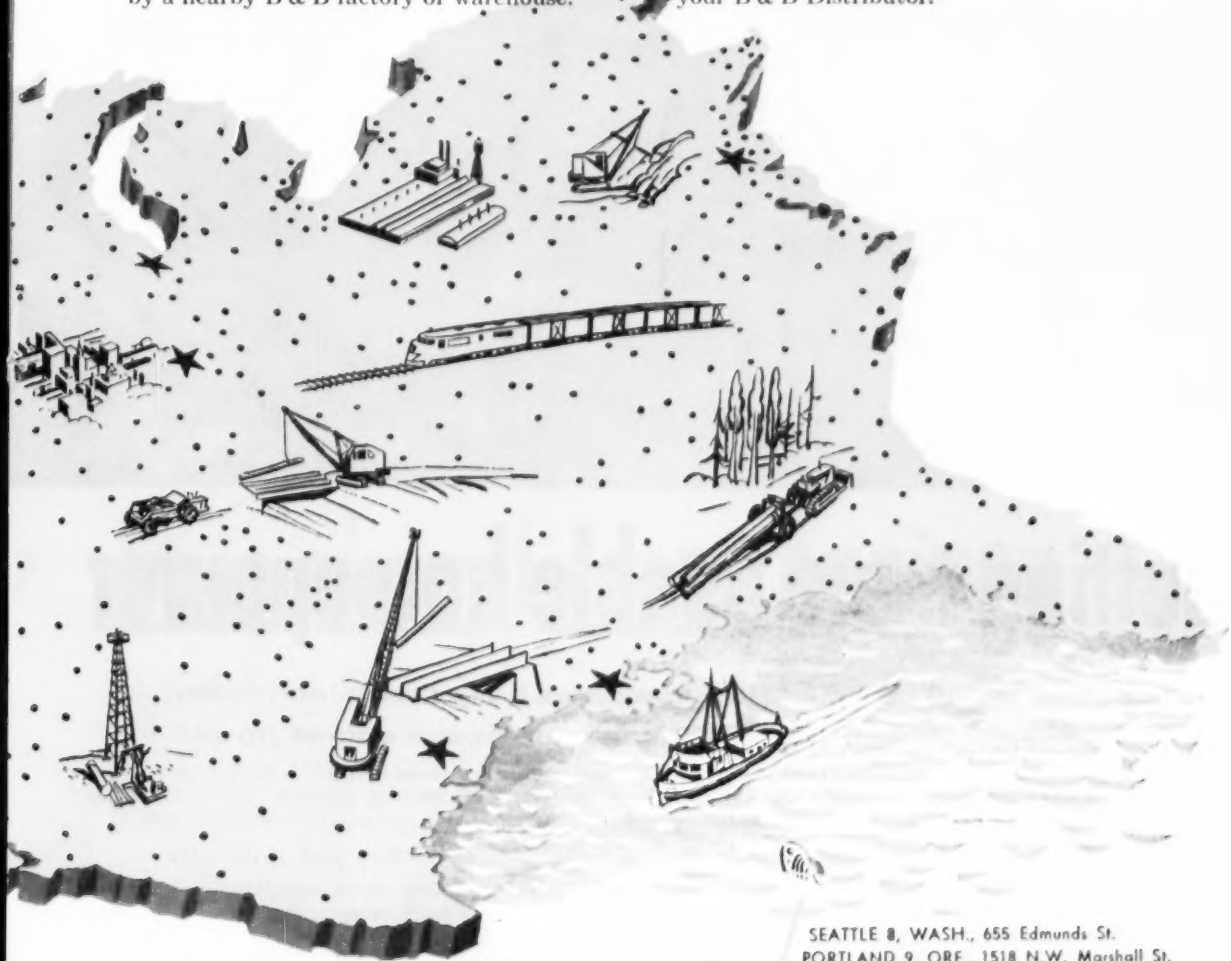
. . . always on hand

Always nearby—always in ample supply—always top quality! That's why it pays to *specify* Yellow Strand Wire Rope for your equipment.

Yellow Strand is always on hand at your nearby Broderick and Bascom Distributor. He is probably the same man who takes care of your equipment, parts and service needs. He "knows" wire rope like an expert. He is served by a nearby B & B factory or warehouse.

This nationwide network of distributors, branches and factories is unique in the wire rope industry. It assures you the correct wire rope when you want it!

You can be *sure* of good performance when you use Yellow Strand "POWERSTEEL" and Yellow Strand Flattened Strand Wire Ropes —and *doubly* sure when they're backed by your B & B Distributor.



Yellow Strand®

BRODERICK & BASCOM ROPE CO.

Manufacturers of Wire Rope for over 80 Years

4203 Union Blvd. St. Louis 15, Mo.

SEATTLE 8, WASH., 655 Edmunds St.
PORTLAND 9, ORE., 1518 N.W. Marshall St.
SAN FRANCISCO 3, CALIF., 44 Potrero Ave.
NEW ORLEANS, LA., 117 Jefferson Highway
TETERBORO, NEW JERSEY, 270 North Street
CHICAGO 7, ILL., 1330 W. Fulton St.
LOS ANGELES 21, CALIF., 2441 Hunter St.
HOUSTON 15, TEXAS, 9350 Market St. Road

Getting more usable horsepower

LINK-BELT SPEEDER machines have precision-made, heavier components to take this bonus engine power

To get an accurate gauge of shovel-crane work potential, it's important to make your comparisons on the basis of usable horsepower rather than engine size. Why? Because size for size, a Link-Belt Speeder delivers *more usable power or line pull* than other machines powered by the same make and model engine. And greater usable horsepower is bonus power that pays off in easier digging, faster cycles, more production and profits.

The variation in the amount of power a given engine actually makes available in the form of line pull (or power at the drums) is determined primarily by the net horsepower the engine delivers at the output shaft. Engine Model X, for example, when run at 750 rpm, delivers *125 hp*. At 950 rpm the same engine develops *150 hp!*

What permits greater horsepower

Because the Link-Belt Speeder line is the industry's most advanced in design —17 new models—it incorporates the latest development in engineering, metallurgy and fabricating. As a result, every Link-Belt Speeder is an "extra strength" machine — a shovel-crane with the added guts and stamina to take full advantage of the bonus horsepower available in each engine . . . at operating speeds well within the engine manufacturers' recommendations.

Only part of the story . . .

More usable horsepower is but one of many reasons why Link-Belt Speeder machines are completely revising existing profit and production standards. Why not see how you, too, can take advantage of Link-Belt Speeder "years ahead design" . . . earn a bigger return on your shovel-crane dollars. Contact your Link-Belt Speeder distributor for details or write Link-Belt Speeder Corp., Cedar Rapids, Iowa. 14,440

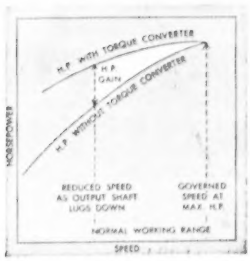
3-point check on usable horsepower

First check the engine manufacturer's "specs" to see what power the engine develops at various speeds. Then check the shovel-crane manufacturer's "specs" to see at what speed he'll actually set that engine. Third, check the shovel-crane itself. See if shafts, clutches, gears and other components have the size and strength to take full advantage of available engine power. Make these checks and you'll discover another sound reason why Link-Belt Speeders are engineered to earn a bigger return on your shovel-crane dollars.

Greater horsepower plus power hydraulic controls gives you speed with safety

With exclusive Speed-o-Matic power hydraulic controls, a Link-Belt Speeder uses oil under pressure to achieve perfect feel of the load under all conditions . . . to eliminate the customary jerk, jump or lag found with air or mechanical controls. Proper pressure is maintained by an engine-driven pump through variable pressure valves. Oil pressure goes directly to hydraulic-actuated clutches. Response is smooth, fast and accurate.

from shovel-crane engines.....



For even more effective use of power

The horsepower gain charted at left is yours with a Link-Belt Speeder equipped with a matched engine torque converter package. Available for all models, torque converters cut digging shock, reduce fuel consumption, match power to the load and reduce engine stalls.

Less chance for end-of-the-shift letdown

Because oil under pressure does all the work, the operator merely needs to flick short-throw levers. He stays fresh and alert, is actually encouraged to push the machine to its high limit all shift long.

It's time to compare . . . with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

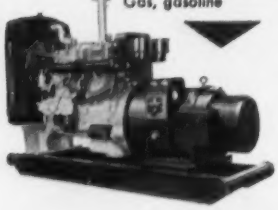
NOW— a complete line of

WAUKESHA

Industrial ENGINATORS®

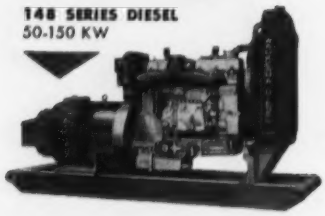
50-700 KW • NATURAL GAS • LPG • GASOLINE • DIESEL

145 SERIES—45-110 KW
Gas, gasoline

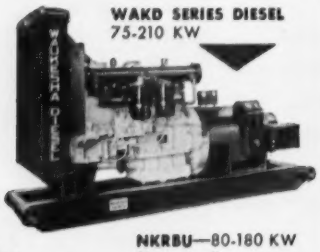


A superb line of Enginators— backed by over 50 years' experience in building heavy-duty engines and electrical equipment. For reliable performance on all fuels, these accurately balanced Waukesha engine-generator combination units supply smooth, steady power in continuous, intermittent and standby service.

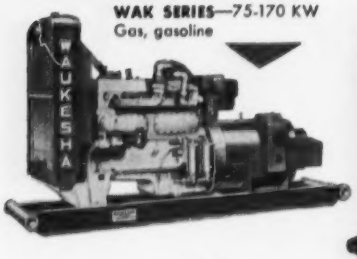
148 SERIES DIESEL
50-150 KW



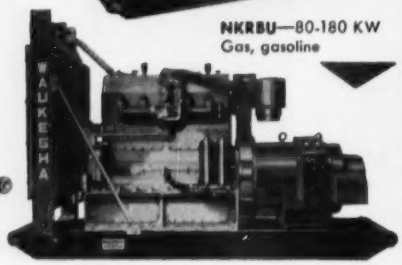
WAKD SERIES DIESEL
75-210 KW



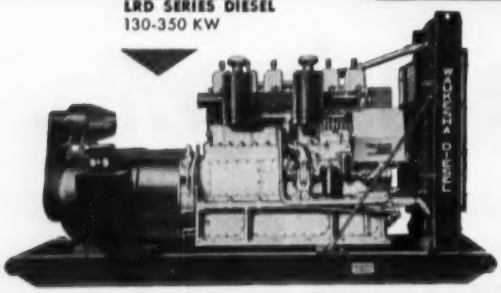
WAK SERIES—75-170 KW
Gas, gasoline



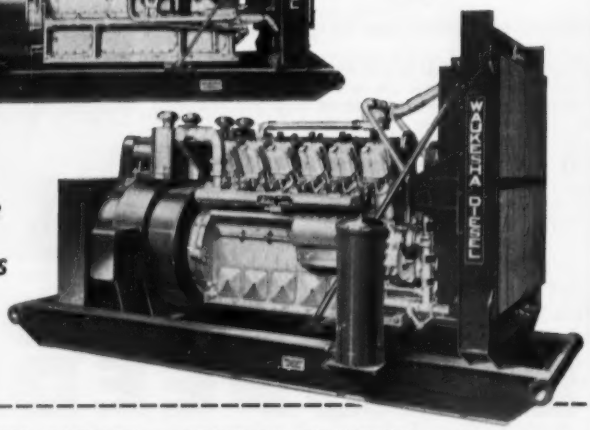
NKRBU—80-180 KW
Gas, gasoline



LRD SERIES DIESEL
130-350 KW



VLR SERIES—250-730 KW
LPG, natural gas, Diesel



WRITE FOR BULLETINS FOR THESE AND OTHER MODELS

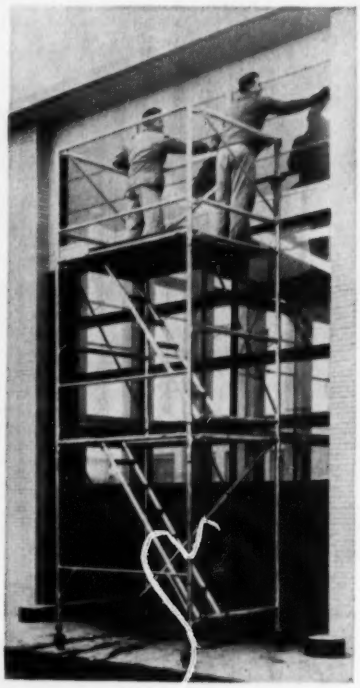
333

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN *RAILWAY DIVISION*

Job Talk . . .

How to Erect Safe Scaffolds

THE NATIONAL Safety Council is sponsoring a year long campaign to cut in half the number of injuries and deaths caused by falls. To aid the efforts of the NSC, the Patent Scaffolding Co. has compiled the following lists of safety rules and practices for better handling of scaffolds.



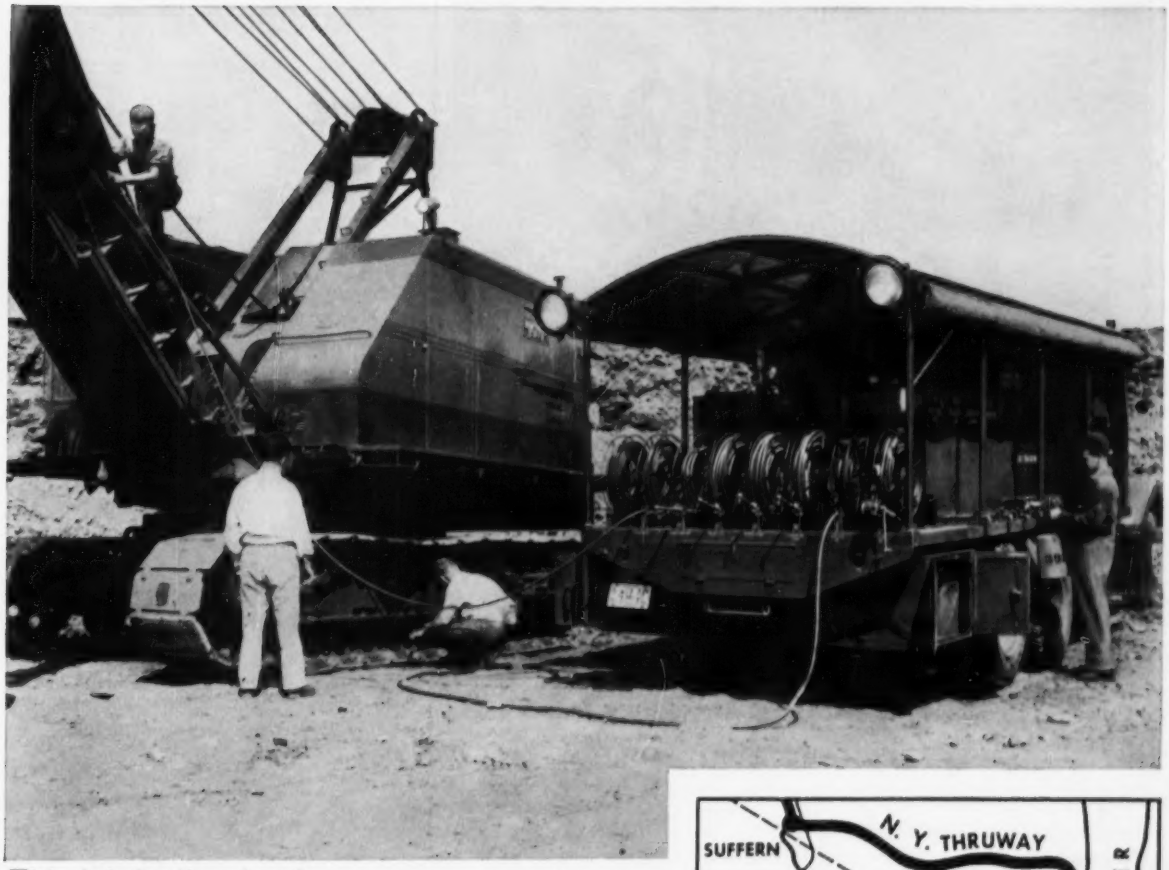
Rolling Scaffolds:

- Lock all caster brakes when tower is in working position.
- Height of working platform should not exceed four times smallest base dimension.
- Do not extend adjusting screws fully.
- Provide sufficient horizontal bracing.
- Never allow workmen to stay on tower when it is in motion.

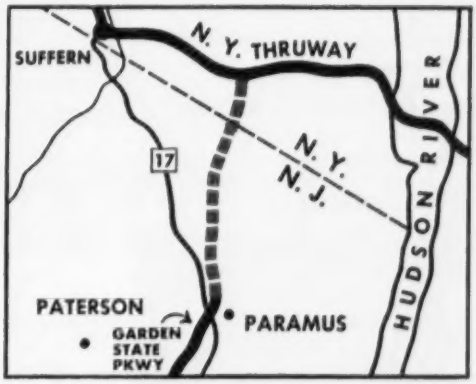
Tube and Coupler Scaffolds:

- Keep scaffold plumb and level. Tighten all coupler bolts before using scaffold.

continued on page 22



This lubricating truck was designed and built by Brewster for high-pressure on-the-site lubrication and fueling of equipment.



A vital link between New Jersey's Garden State Parkway and the New York Thruway is being built by Geo. M. Brewster & Son, Inc. It's a 4-lane 3½-mile highway.

Geo. M. Brewster & Son, Inc.

relies on ESSOLUBE HD for cleaner engines, greater power, longer life

Essolube HD was specified for Brewster's 85 pieces of construction equipment used on the Spring Valley-Paramus Connecting Link job. (In their new Caterpillar supercharged diesels, Brewster uses Esso Estor D-3.) Brewster noted *outstanding internal cleanliness resulting in better engine efficiency and economy, prolonged engine life.*

What's more, Essolube HD cuts Brewster's handling and inventory since it is being used in both diesel and gasoline engines. And there's never any danger of using the *wrong* lubricant.

Brewster is using Esso fuels and lubricants *exclusively* on the Spring Valley job. Result: maximum power, fewer breakdowns, longer engine life for all equipment.

More and more contractors are finding out that in any equipment, on any job, under any operating conditions...it pays to specify *Esso.*

For more information, contact the nearest Division office of Esso Standard Oil Company: Boston; Pelham, N. Y.; Elizabeth, N. J.; Bala-Cynwyd, Pa.; Baltimore; Richmond; Charlotte; Columbia, S. C.; Memphis; New Orleans.

For better results . . .

Esso

PETROLEUM PRODUCTS

(Advertisement)

Tandem Spreading of the Asphaltic Concrete speeded the resurfacing work as . . .

Bitumuls and Asphalt Put New Life in Famous Ridge Route on U. S. Highway 99

IN JUNE OF 1956, one of the largest resurfacing contracts ever let was awarded to Schroeder & Co., Sun Valley, California. With completion scheduled for January 1957, speed was essential. So was close coordination and timing on deliveries of the asphalts required for this record undertaking.

The job called for 21 miles of multi-lane Asphaltic Concrete resurfacing; 13 miles of sub-sealing, crack-sealing and priming of old rigid-type pavement ahead of resurfacing; 8 miles of sealing and priming existing bituminous 4-lane divided roadway; and extensive shoulder work. The total estimated cost was well over half a million dollars.

Applying Bitumuls Slurry Seal to existing bituminous pavement ahead of resurfacing.

The quantities of asphalt and Bitumuls required for this job are impressive too: For sub-sealing, 1,700 tons of Grade 10-25 Air Refined Asphalt; for resurfacing, 3,500 tons of 200-300 Penetration Paving Asphalt; for seal and prime work, 140,000 gallons of Bitumuls.

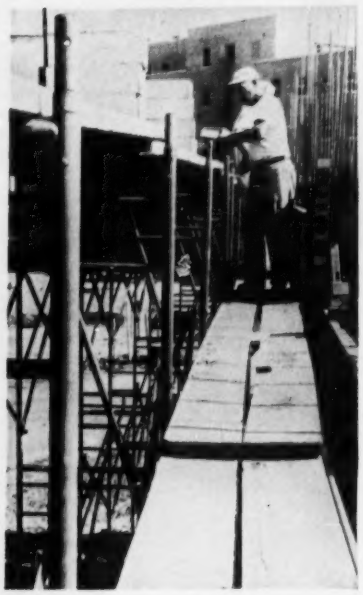
Here's how the job progressed— On the old rigid-type pavement, slabs were drilled and sub-sealed with Air Refined Asphalt; then the cracks and joints were filled and sealed. This treatment was followed by the application of two lifts of Asphaltic Concrete to provide a uniform 3-inch thickness. On this phase of the operation, two spreaders equipped with special shoulder extensions placed the mix to a full width of 37 feet in a single pass.

The existing bituminous pavement required only a 1-inch overlay of Asphaltic Concrete as opposed to the 3 inches specified for the rigid-type section. Ahead of the placement of this 1-inch thickness, Bitumuls Slurry Seal was used to seal and prime the old surface.

This job, because of its unusual size and many complexities, provides an excellent example of the ability of American Bitumuls & Asphalt Co. to deliver a full line of asphaltic products to meet every need . . . and to deliver it on time. It will pay you to check with our office nearest you for *all* your asphalt requirements.

American Bitumuls & Asphalt Company
200 Bush Street
San Francisco 20, Calif.

JOB TALK . . . continued



• Tie fixed scaffolds to building or other firm support every 25 to 30 ft horizontally and every 25 ft vertically.

• Always use guard rails.

• Use sills when erecting on soft ground. Make sure planking is of good quality.

Suspended and Swinging Scaffolds:

• Keep all bearing points well lubricated.

• Inspect ratchet and locking

continued on page 26

VERSATILITY... HIGH PRODUCTION

... all in one low-cost team

Here it is—the Allis-Chalmers HD-6 crawler tractor (63 belt hp) and the Model 44 scraper (4 yd struck, 4.7 yd heaped). This self-loading combination is a natural for many contractors . . . big enough to move dirt fast, small enough to leave room for profit on low-yardage jobs.

In addition to low first cost, the HD-6 has dozens of features that help keep operating costs down . . . including, 1,000-hour lube intervals for truck wheels, idlers and support rollers.

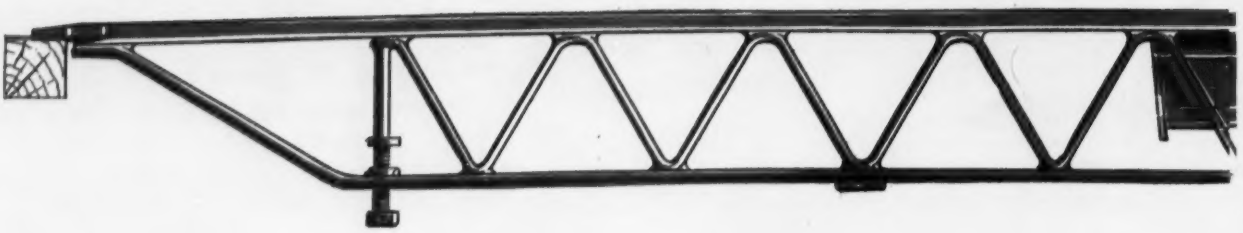
Full hydraulic control speeds jobs, simplifies operator's work. And the Model 44 scraper has these important big-scraper advantages: high apron lift, forced ejection, wide cutting edge, high flotation tires and ample clearance.

For all the facts on this low-cost tractor-scraper combination, see your nearby Allis-Chalmers construction machinery dealer now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

This is Spanall®

HORIZONTAL SHORING SAVES UP TO



FLOOR AREAS BELOW SPANALL

FORMS REMAIN FREE AND CLEAR

40% ON ALL BEAM AND SLAB CONCRETE FLOOR FORMS

Contractors everywhere—from coast-to-coast, in Canada and in Latin America—find it easier, and quicker by far, to use SPANALL for every type of poured concrete formwork.

With SPANALL, areas below the forms are never obstructed by a forest of vertical shoring. Such space becomes available, always free and clear, for storage or any other urgent activity. In this respect alone, SPANALL has proved itself to be of immeasurable value.

SPANALL pays off in other ways, too. In fact, it is especially engineered to do a better forming job, faster, and with generous savings—up to 40% in both time and money.

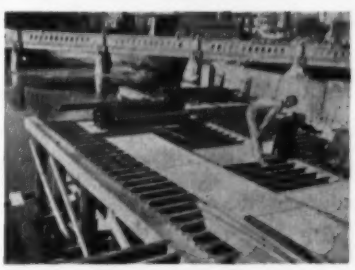
Newly published catalog tells the full story. Send for your copy today. It's free.

SPANALL

OF THE AMERICAS, INC.

787 United Nations Plaza, New York 17, N.Y.

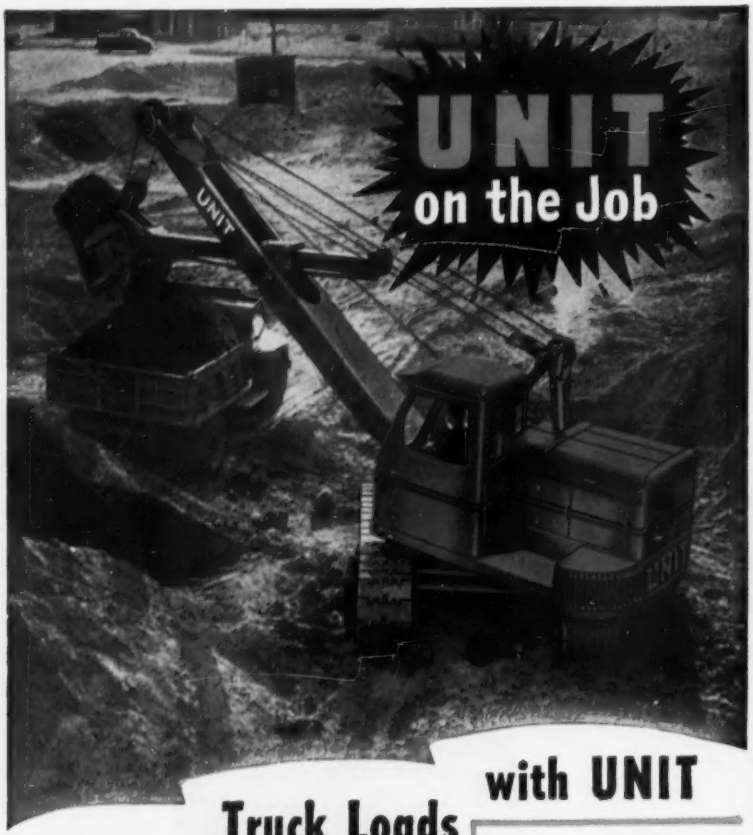
SPANALL all-metal sections assemble fast and easy. Strip quickly. Store conveniently for re-use.



SPANALL applies most advantageously over water. On this bridge formwork, camber is set automatically as sections are adjusted to size.

SPANALL assures safety during pouring; load bearing capacities are based on 2.17 safety factor.

SPANALL is versatile. Sections assemble to a wide range of span lengths without need for costly intermediate vertical shoring.



Step-up Truck Loads with UNIT

Here's a UNIT ¾ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

UNIT CRANE & SHOVEL CORPORATION
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

UNIT

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

JOB TALK . . . continued

pawl springs to see that they are in good working condition. Keep pawls engaged at all times, except when unreeling wire ropes or lowering scaffold.

- Keep weight of men and materials evenly distributed. Never overload.
- Reinforce outriggers if the overhang exceeds distance specified.
- Properly install toe boards and guard rails. Overlap planks.

Sectional Scaffolds:

- Keep scaffolds plumb and level at all times. Use adjusting screws rather than blocking.
- On exterior work, tie in to the wall every 25 ft of height and every 28 ft of length.
- Use guard railing at all heights. Never climb on cross braces.
- Set base plates on sills to spread the load on soft ground.

- Check all wing nuts and locks for tightness. Use horizontal cross braces in addition to diagonal braces.
- Make sure planking meets load requirements. Never use even slightly damaged material.

THE NEW JOY RP-125 AIRVANE COMPRESSOR

THE *Smoothest* 125 CFM ROTARY PORTABLE YET

CONTRACTORS: Want a small portable that starts easy, runs smooth, and keeps on running? Here it is—the Joy 125. And here's why:

THERMAL BY-PASS OIL CIRCULATING SYSTEM—provides immediate lubrication and temperature control under *all* weather conditions.

SPLINE COUPLING—a direct drive system that does away with clutches for most efficient power transmission.

COMPACT BODY AND FRAME—easy to move from job to job—tows easily at highway speeds . . . low center of gravity keeps the 125 stable over rough job locations—and, although it's compact, there's plenty of room inside for easy maintenance.

Find out more about the smoothest 125 rotary on the market . . . see your Joy Distributor or write to ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

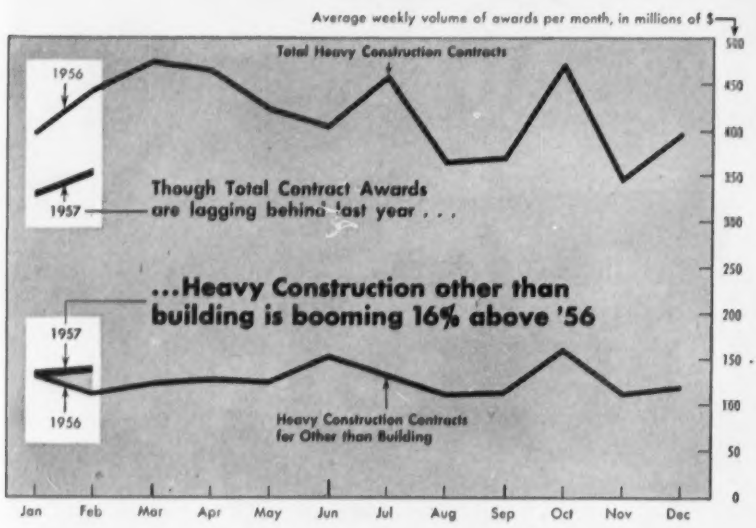
WSW C 6478-187

JOY... EQUIPMENT FOR CONSTRUCTION...FOR ALL INDUSTRY

Write for free bulletin 157-23

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

It's Your Business . . .



Highway Awards Boost Construction Contracts

THE BOOM in heavy construction activity is still rolling along, but it's a different sort of boom than it was only last year. Then, the high level of industrial building was its most striking characteristic. Today, its outstanding features are big increases in highway, earthwork-irrigation-drainage, and waterworks business.

Contractors doing heavy construction other than building find their market booming bigger than ever. On top of last year's 10% increase in new business, they show a further 16% rise in value of contracts awarded so far this year. Furthermore, they can expect this uptrend to continue. Construction Methods forecasts a 22% rise in contracts awarded this year for heavy construction other than building to a new record total of $8 billion.

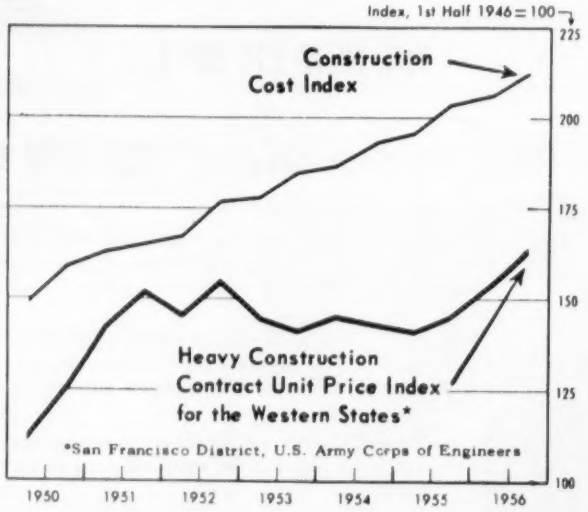
Highway awards have been the prime mover for this big increase in new work. One week in February saw highway contracts top $100 million, an astronomical weekly total for highways. The other weeks so far in 1957 also have been loaded with new highway

CONTRACT UNIT PRICES FOR WESTERN STATES

Estimates Section, San Francisco District, U.S. Army

Item	Unit	1952 July-Dec.	1955 Jan.-June	1955 July-Dec.	1956 Jan.-June	1956 July-Dec.
Crushed Rock Base Course	Ton	$ 3.18	$ 3.03	$ 2.90	$ 3.48	$ 3.56
Plant Mix Aggregate	Ton	5.25	5.86	6.04	6.19	7.25
Plant Mix Asphalt	Ton	24.60	25.00	19.63	21.74	22.18
Cover Aggregate	Ton	6.62	6.63	6.71	6.60	7.34
Structural Concrete	CY	73.20	67.00	74.00	72.00	78.00
Pavement Concrete	CY	28.88	22.00	23.00	24.00	20.00
Reinforcing Steel	100 Lb	14.60	13.00	13.00	13.00	16.50
Cement	BBL	4.77	4.68	4.76	5.04	5.21
C.M. Pipe 12"	LF	3.85	3.60	3.72	3.98	4.13
C.M. Pipe 24"	LF	6.53	6.84	6.66	6.60	7.29
R.C. Pipe 18"	LF	5.83	5.15	5.37	5.91	6.25
R.C. Pipe 36"	LF	13.27	11.62	11.23	11.86	13.08
V.C. Pipe 6"	LF	3.32	2.75	3.38	3.50	3.55
V.C. Pipe 8"	LF	3.93	3.36	3.71	3.99	4.36
Sewer Manhole	1/10 Ea.	26.66	23.70	23.00	24.90	25.40
Roadway Excavation	CY	1.22	.80	.95	.92	1.12
Structural Excavation	CY	3.70	3.78	3.48	3.63	4.42
Watering	M Gal.	2.22	1.71	1.69	1.76	1.94
Flat Wheel Roller	R-H	8.68	8.50	7.74	8.15	9.03
Piling, Green Wood, Furnish.	LF	1.09	1.17	1.20	1.35	1.18
Piling, Treated, Furnish	LF	1.93	1.84	1.75	2.00	1.83
Timber in Place	100 FBM	30.50	32.10	36.70	45.20	49.60
2" Galvanized Steel Pipe	LF	1.61	1.65	1.74	1.60	1.68
Cast Iron Pipe 6"	LF	5.57	4.36	3.94	4.54	4.70
Cast Iron Pipe 8"	LF	6.64	4.80	4.79	5.23	5.83
Gate Valve 6"	1/10 Ea.	12.60	8.85	10.40	12.50	12.40
Index (Jan.-June 1946 = 100)		155.04*	141.37	145.36	154.74	164.12

*Previous record high

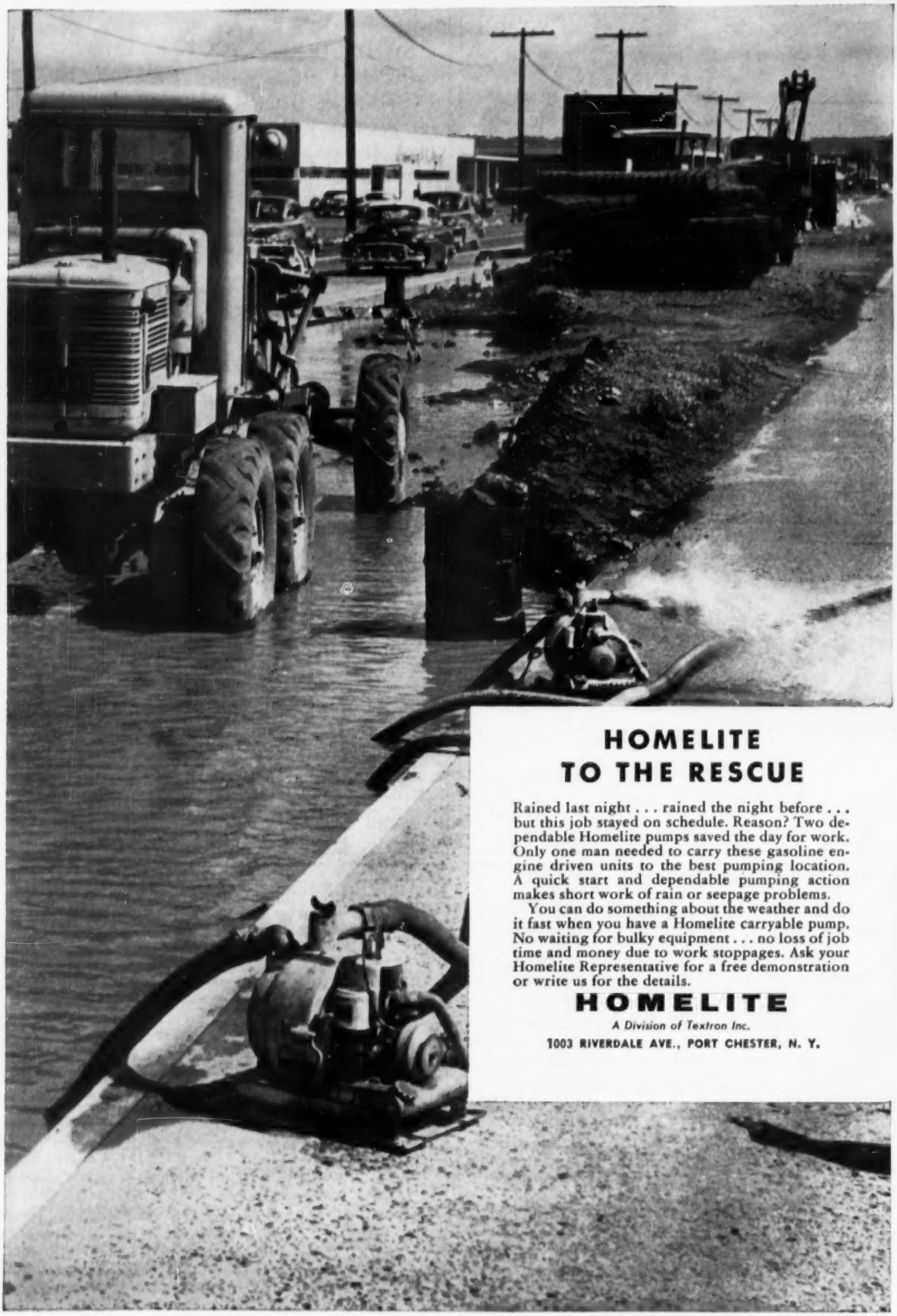


Bid Prices Rise 13% in the West

More evidence that contractors are raising their bid prices on heavy construction projects to cover substantial increases in costs of materials, labor, and equipment (plus anticipated increases in these items over the contract period) comes from the San Francisco District, U.S. Army Corps of Engineers.

The Estimates Section reports its Contract Unit Price Index climbed 12.9% between the last half of 1955 and the last half of 1956 (see chart). This was the sharpest rise in the bid price index since the sudden inflation following the outbreak of the Korean War in 1950. Almost half of the rise came in the last half of 1956, the third consecutive six-months period of rising bid prices. The index is based on the average of the three lowest bids on heavy construction and underground utility projects let in the western states.

THE CASE OF
THE IDEA THAT SAVED TWO DAYS
...I'M GOING TO LOSE ABOUT TWO DAYS WHILE WE REBUILD THAT FLYWHEEL CLUTCH!
CATERPILLAR
WHY SHOULD YOU? PUT IN A REBUILT ASSEMBLY FROM OUR EXCHANGE STOCK AND YOU'LL HAVE YOUR TRACTOR GOING THIS AFTERNOON!
CAT
IS IT EXPENSIVE?
NOT AT ALL...
--YOU PAY ONLY FOR THE PARTS AND REPAIR SERVICE TO PUT YOUR CLUTCH IN THE SAME FIRST-CLASS SHAPE AS THE EXCHANGE UNIT. THEN YOUR REBUILT ASSEMBLY GOES INTO OUR EXCHANGE STOCK.
EXCELLENT IDEA! GO AHEAD...
THAT AFTERNOON
SURE AM GLAD I FOUND OUT ABOUT YOUR PARTS ASSEMBLY EXCHANGE PLAN, ART!
WE HAVE OTHER ASSEMBLIES ON HAND TOO, JIM. IT'S AN IDEA THAT REALLY SHORTENS DOWN TIME!
CATERPILLAR*
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.
CAT CARE FOR LONGER WEAR
LET ME HELP KEEP YOUR CAT* EQUIPMENT ON THE JOB!
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.



HOMELITE TO THE RESCUE

Rained last night . . . rained the night before . . . but this job stayed on schedule. Reason? Two dependable Homelite pumps saved the day for work. Only one man needed to carry these gasoline engine driven units to the best pumping location. A quick start and dependable pumping action makes short work of rain or seepage problems.

You can do something about the weather and do it fast when you have a Homelite carryable pump. No waiting for bulky equipment . . . no loss of job time and money due to work stoppages. Ask your Homelite Representative for a free demonstration or write us for the details.

HOMELITE

A Division of Textron Inc.

1003 RIVERDALE AVE., PORT CHESTER, N. Y.

business. Total contracts for the first nine weeks zoomed 36% above last year to $470 million. Much of this work is part of the new interstate highway system, and it also includes large awards for the Illinois Toll Road.

Bridge contracts are higher this year, too, though they show a more modest gain than highways with a 7% rise to $104 million.

Another big support behind the boom in heavy construction other than building is earthwork-irrigation-drainage, which soared 87% above a year ago to $204 million in awards for the first nine weeks. This category includes dams, river and harbor improvements, and reclamation projects.

Heavy construction contractors are also getting more business this year than last in waterworks (up 16%) and unclassified work (up 4%). And although sewerage contracts are 50% below last year, this decline is traced to a whopping $90 million in contracts let last year by the Allegheny County (Pa.) Sanitary Authority.

BUILDING CONTRACTS OFF— Public nonresidential building is the only type of building construction where contractors are taking on more business this year than last. Awards for public projects are running 15% higher than during the first nine weeks of 1956.

By contrast, mass housing (public and private) and commercial building have slumped sharply below the year ago rate of awards. Industrial building is so far holding up to last year's, but it, too, will fall behind 1956's record volume.

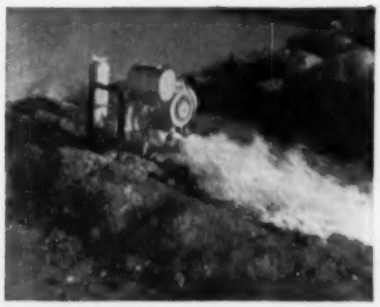
Equipment Makers See Orders Up 26%

Some construction equipment manufacturers have become much more optimistic about their 1957 sales prospects since last November. This is clear from the new composite forecast of new orders for construction and mining machinery compiled by the McGraw-Hill Department of Economics from forecasts supplied by individual equipment makers (see chart).

This latest check of what manufacturers expect shows they are looking for a 26% jump in new orders this year. That's a big increase (shaded portion in chart) over their expectations as of last November—before the Road Show—when the consensus of their orders forecast put the first nine months of this year 8% above the 1956 period.

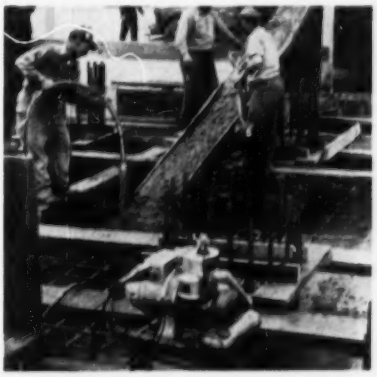
continued on page 38

Full Line of Carryable Construction Equipment Now Offered by Homelite



Carryable Diaphragm Pump . . . This self-priming, 120 pound diaphragm pump will handle water in the thickest sand, muck, or mud. Capacity: 5,000 g.p.h. Size: 3". Complete line of centrifugal pumps are also available in sizes from 1½" to 3".

Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.



One-Man Electric Vibrator . . . It takes only one man to place concrete with powerful, Homelite high-cycle or universal electric concrete vibrators. Carryable Homelite generator provides power for high-cycle vibrators *and* 110 volt DC for all universal vibrators, tools and floodlights.

HOMELITE

a division of Textron Inc.

PORT CHESTER, NEW YORK

5 products at a time...
crushed, screened and washed

300 tons per hour...
with 35% crush

Minimum labor required...
all-electric operation

. . . that's why Genesee Sand & Gravel Company SELECTED ALL CEDARAPIDS EQUIPMENT

When a producer opens up a new pit, his prime concern is to get into big-volume production fast, with mininum labor . . . that's why he's mighty glad to have a high-capacity, easily set up plant like this portable Cedarapids Commander — Wash-All combination. 3000 tons a day of five sizes of accurately graded gravel and sand *is profitable operation!*

For Genesee Sand & Gravel Company's new plant, President Henry Jaeger, Jr. selected a Cedarapids Commander, a Wash-All plant, 5 portable stockpiling conveyors, and a 540-ft. sectional feed conveyor fed by a Cedarapids reciprocating feeder and hopper. The plant is completely electrified and equipped throughout with Cedarapids Motorized Head Pulleys to reduce labor and maintenance requirements.

Genesee moved into the new pit near Genesee Depot, Wisconsin, on October 2. By October 15 they were in production and are now turning out . . .

Mason sand	8 mesh and under	5%
Coarse sand	¼" to 8 mesh	50%
Pea gravel	⅜" to ¼"	2%
No. 1	¾" to ⅜"	22%
No. 2	1½" to ¾"	21%

Whether you're an experienced, well-established producer like Genesee Sand & Gravel Co., or just entering the field, you can depend on Cedarapids equipment for the high capacity, low maintenance performance that spells profitable operation in your specific job. Ask your Cedarapids dealer about Cedarapids equipment for your job.

Cedarapids Commander — The completely electric Commander crushing and screening plant in Genesee Sand & Gravel Company's new pit is equipped with spray bars on the screen and a sand screw attachment which delivers mason sand to the sand classifier. All other crushed and screened material discharges into the Wash-All Plant.

Cedarapids Wash-All — Coarse sand and three sizes of gravel are screened and washed in the Cedarapids all-electric Wash-All. The coarse sand is taken out by the twin-screw washer-classifier-dehydrator, while each size of crushed gravel is stockpiled with a portable conveyor. Note Motorized Head Pulleys on all conveyors in the entire plant.

Cedarapids — Built by IOWA

IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

Here's real help

for road-building contractors!

Reduce delays—cut costs!

Construction in progress on 10 miles of the new Massachusetts Toll Highway—in Palmer-Chicopee and North Wilbraham, Mass. The Palmer section requires excavation of 2 million yards of earth and 650 thousand yards of rock. Grandview Construction Corp. of Mt. Vernon, N.Y., contractors for this section, used Gulf petroleum products exclusively on the job.

how GULF keeps equipment rolling

On the Ohio Turnpike, Gulf was the supplier on 18 of the 45 contracts representing nearly $81 million out of the total cost of $193 million. Photo shows section under construction between Strongsville and Olmsted Falls, Ohio, where more than a million cubic yards of dirt had to be moved. Typical of Gulf service was delivery of 68,000 gallons of diesel fuel in a 20-day period to one 5000-gallon underground storage tank for Peter Kiewit Sons' Company and Condon-Cunningham Company.

Shown under construction here is the only tunnel on the West Virginia Turnpike—a 2-lane tunnel, 2665 feet long with a finished diameter of 36 feet. Work on this part of the job required 25,000 cubic yards of open cut excavation, 91,800 cubic yards of tunnel excavation, and 20,800 cubic yards of concrete tunnel lining. Bates & Rogers Construction Corporation of Chicago, Illinois, used Gulf petroleum products exclusively.

on major highway projects

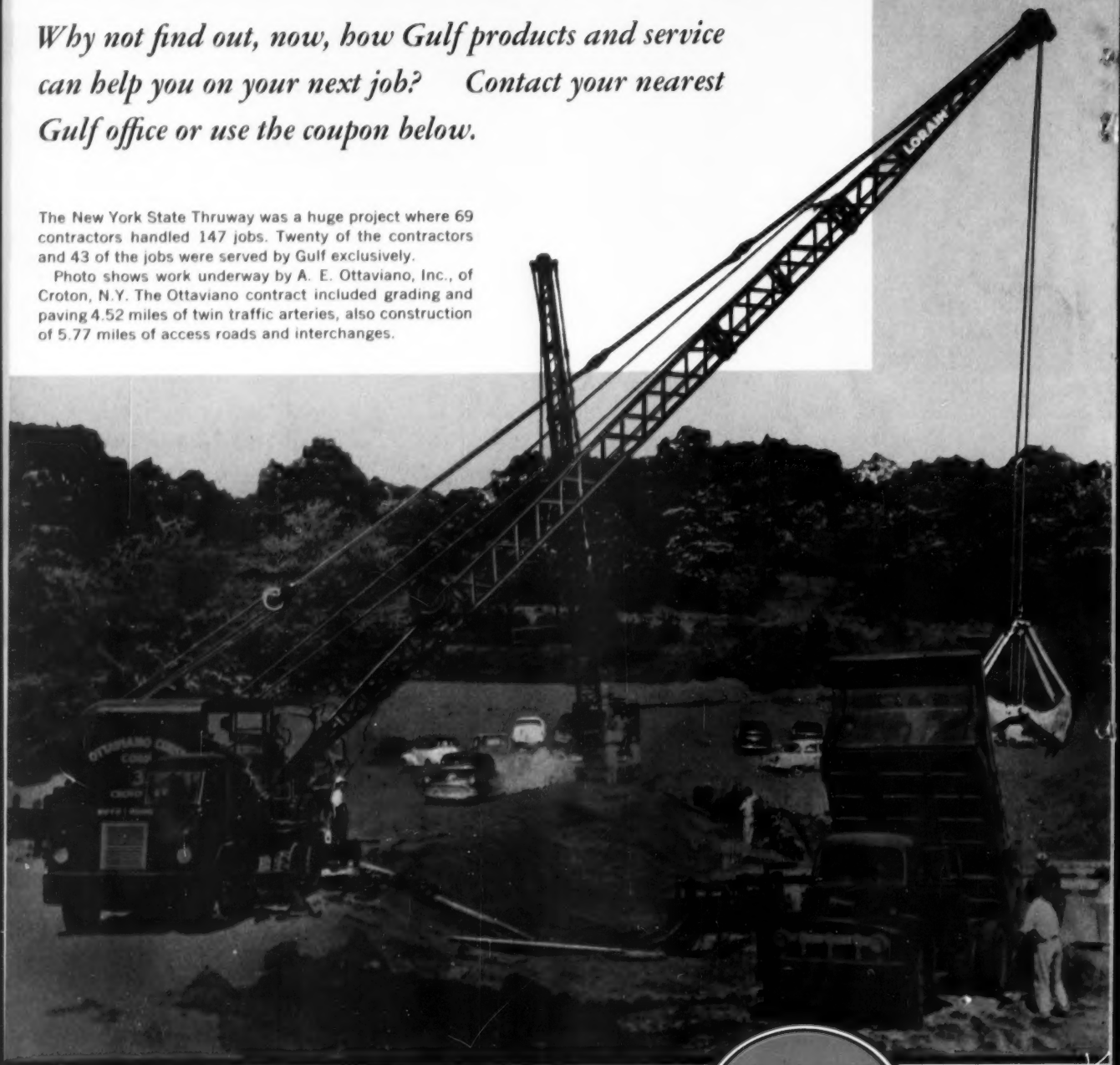
It's not just coincidence that from Maine to New Mexico . . . from the Atlantic Ocean to the Rockies . . . more and more contractors are relying on Gulf petroleum products. That's because:

- Dealing with Gulf, you're sure of prompt delivery. When your equipment arrives at the job, Gulf will be waiting, ready to deliver fuels and lubricants. As long as the job lasts, Gulf will supply you from a nearby bulk plant. Gulf has 1500 strategically located warehouses, so you're sure of an uninterrupted supply of petroleum products—on time!
- Gulf Petro-engineering Service is provided to you on the job . . . to make sure that you're using the most economical and efficient petroleum products for every unit of your equipment. Thirteen hundred Gulf scientists and engineers stand behind your Gulf Sales Engineer to provide technical advice whenever you need it.
- Gulf fuels insure top engine performance. They burn clean and deliver full power.
- Gulf lubricants provide an extra margin of protection to every moving part. With these quality lubricants you'll have fewer mechanical delays, lower maintenance costs and a smoother-running job.

Why not find out, now, how Gulf products and service can help you on your next job? Contact your nearest Gulf office or use the coupon below.

The New York State Thruway was a huge project where 69 contractors handled 147 jobs. Twenty of the contractors and 43 of the jobs were served by Gulf exclusively.

Photo shows work underway by A. E. Ottaviano, Inc., of Croton, N.Y. The Ottaviano contract included grading and paving 4.52 miles of twin traffic arteries, also construction of 5.77 miles of access roads and interchanges.



Gulf Oil Corporation
1822 Gulf Building, Pittsburgh 30, Penna.

Without any obligation on my part:

- ☐ Send me a copy of "Gulf and Your Business."
- ☐ Send me a copy of "Contractors Guide" (Lubrication and Maintenance Information).
- ☐ Have a Gulf Sales Engineer call on me.

Name_____

Company_____

Street Address_____

City_____ Zone____ State_____

GULF

GULF OIL CORPORATION
1822 Gulf Building
Pittsburgh, Pa.

SP-8944

Driving form pins on the New York Thruway near Fultonville, New York.

Drilling rock for blasting on the northeastern extension of the Pennsylvania Turnpike, Quakertown, Pa.

Le Roi Tractair "plugs the leaks" in new highway construction

Versatile low-cost tractor-compressor keeps expensive major equipment rolling

Idle big equipment drains off profits. Every hour a dozer, shovel, or paver sits around waiting, it means capital investment down the drain.

Low-cost Tractair is a fast-moving source of airpower that moves quickly from site-to-site with its own tools. Its usefulness is further increased by a wide range of attachments like back hoe, front-end loader, and dozer blade, that give Tractair big-equipment usefulness without "big-ticket" costs!

Tractair can stay in front of big equipment, prevent delay. It can roll up to a rock face and drill in a round so shovels can load out, dozers and graders swing in to blue-top grade; power jack hammers on a street-repair job or run along driving form pins to speed pavers.

You don't tie up a truck to move your compressor. No investment leak there. Tractair moves alone—saves you about 50% of the cost of a truck *and* compressor normally needed. Tractair stamina pulls it through thick mud and over slippery ground — places that a truck couldn't go. Tools, operator, and power source, roll up to work ready to go all day, all weather.

Tractair is the one piece of equipment that is never idle. With its many tools and attachments it serves as a reserve labor gang, limited in usefulness only by your ingenuity!

See Tractair at your Le Roi Distributor. You'll quickly see how a small investment here keeps big equipment rolling on the big road jobs. T-71

Loader-equipped Tractair powering jack hammer on Major Deegan Expressway, Bronx, New York.

LE ROI

Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

(Advertisement)

IT'S YOUR BUSINESS . . .

continued from page 31

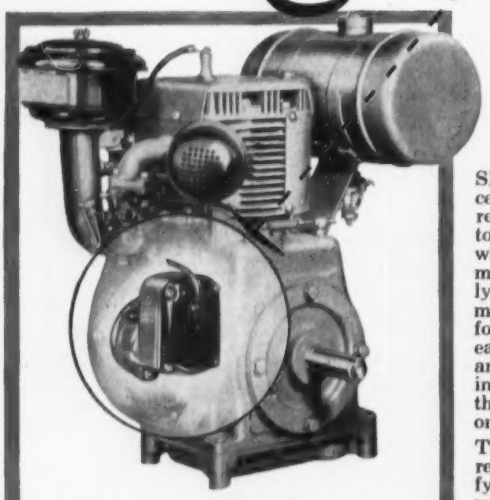
Though new orders didn't quite live up to forecasts during the last half of 1956, some manufacturers have revised their forecasts sharply higher for the first half of this year. In fact, their new forecasts are running about 18% higher than the November estimates.

One reason for this greater optimism could be that some makers feel that the highway program was slower starting than expected, and they now are looking for an upsurge in highway contracts that will cause a big increase in equipment sales. The 36% jump in highway awards so far this year shows that such an upsurge is under way. Moreover, awards for other types of construction requiring heavy use of equipment also are running ahead of last year by substantial margins.

However, a 26% increase in orders this year is a high target considering that contractors raised their equipment purchases by 32% in 1955 and again by about 30% in 1956, according to Construction Method's Shipments Index. Moreover, most manufacturers responding to our survey in January were in agreement that 1957 sales would run about 10% higher than 1956, as previously forecast by Construction Methods.

SELF-CONTAINED

Magneto



The finest ignition system ever developed for air-cooled engines, 3 to 56 hp. . . . and here's why!

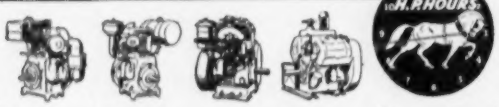
Each Wisconsin Engine magneto is entirely self-contained, mounts OUTSIDE the engine, and is accessible for service by simply removing two bolts. No need to disassemble the engine when servicing. Also, each magneto is gear-driven, tightly sealed against dust and moisture and impulse-coupled for a quick, hot spark and easy starting in any weather, any climate . . . a heavy-duty industrial type magneto of the type usually found only on much larger engines.

The magneto is another good reason why you should specify Wisconsin Engines for your equipment . . . and gain more service, do less servicing.

Write for handy service map S-198 pinpointing locations of more than 2000 authorized service stations ready to serve you.

. . . another reason why

WISCONSIN ENGINES rank 1st in the world, 3 to 56 hp.



WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

Better Performance Depends on Better Features....

SOME BIG CONTRACT AWARDS OF THE MONTH

Wismer & Becker, 1731 South St., Sacramento, Calif. Installing two turbines and generators, related electrical and mechanical equipment at Poe Powerhouse, 20 miles from Oroville, Calif. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif. $35,000,000.

Brice Building Co., 1021 2nd Ave. N., Birmingham, Ala. Paper mill expansion, Crossett, Ark., for Crossett Lumber Co., Crossett, Ark. $20,000,000.

M. J. Boyle & Co., 2489 N. Elston Ave., Chicago, Ill. Bascule bridge East Ohio and north branch of Chicago River, Chicago, Ill. Cook Co., County Bldg., Chicago, Ill. $9,600,000.

Chas. B. Johnson & Son, Inc., 6 N. Michigan Ave., Chicago, Ill. Incinerator plant, 10301 S. Doty Ave. near Lake Calumet, Chicago, Ill. City, City Hall, Chicago, Ill. $5,415,800.

McKee Co., 2300 Chester Ave., Cleveland, Ohio. Additions to steel mill in Indiana pickling facilities, roll shop, annealing bldg., tandem mill and normalizing building, East Chicago, Inc. Inland Steel Co., 38 S. Dearborn St., Chicago, Ill. $5,000,000.

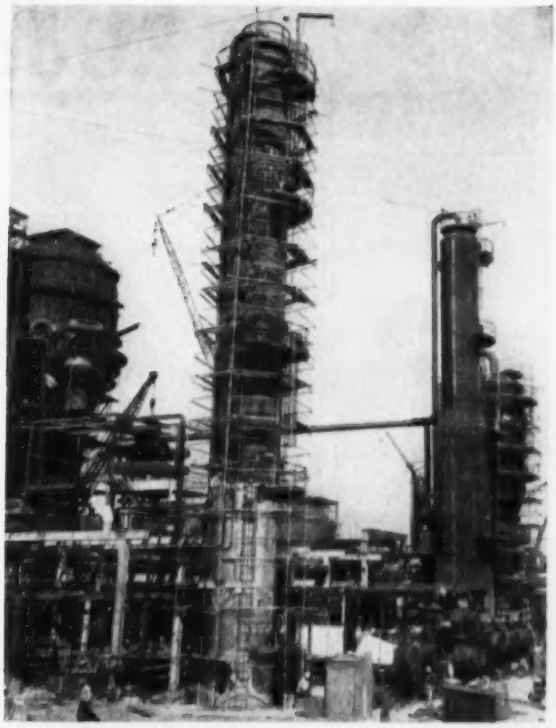
Stearns-Roger Mfg. Co., 660 Bannock St., Denver, Colo. Design and construct power plant expansion including 22,000-kw steam turbine generating plant and construction sub-station, Canon City, Colo. Southern Colorado Power Co., 115 W. 2 St., Pueblo, Colo. $5,000,000.

Kiewit-Judson Pacific Murphy, 4322 East Shore Hy., Emeryville, Calif. Steel arch bridge across Colorado River, Glen Canyon Dam, Colorado River Storage Proj. near Lees Ferry, Ariz., DC 4800, Arizona- Utah. Bureau Reclamation, Dpt. Interior, Kanab, Utah. $4,139,277.

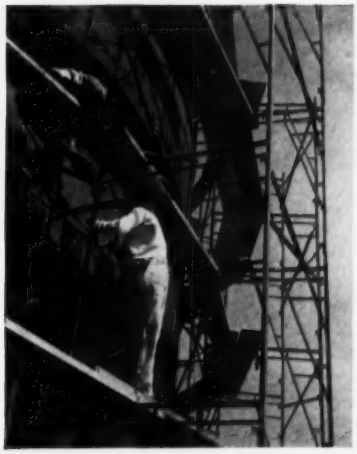
(Advertisement)

Scaffolding Methods . . .

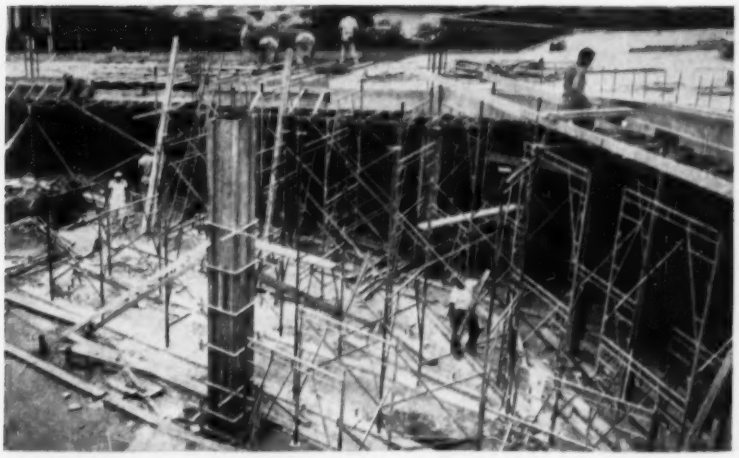
A Picture Report on Efficient Ways To Scaffold and Shore... by Patent Scaffolding Co.



BIG REFINERY JOB — Nearly 15 miles of "TubeLox"® Steel Scaffolding and 3,500 "Trouble Saver"® Sectional Steel Scaffolding frames are used by C. F. Braun & Co., contractor, to get safe, sturdy working platforms for building the new Tidewater Oil Co. Delaware Flying-A Refinery, Wilmington. Note how "TubeLox" Scaffolding provides easy access all over the 155'-high depropanizer column, center.



CLOSE-UP — "Trouble Saver" Sectional Steel Scaffolding surrounds an oil storage tank at the construction scene of Tidewater Oil Co. Delaware Flying-A Refinery, Wilmington. Workmen get close to apply exterior insulation.



SLOPING FORMWORK SUPPORT — Formwork for the concrete pan joist construction of the sloping vehicle ramp at the Arnold Constable Store, New Brunswick, N.J., is supported by 5'-wide "Trouble Saver" Sectional Steel Shoring frames. 160 2'-wide Ladder Scaffolds are also used to support 18"-deep beams varying from 30" to 54" wide. James Mitchell, Inc., is the general contractor.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that **sells** and **rents** "Gold Medal" Scaffolds.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

GOLD MEDAL LADDERS SCAFFOLDING

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Dept. CME, Long Island City 1, N. Y.

West Coast: 6931 Stanford Ave., Los Angeles 1, Calif. • In Canada: 355 Dufferin St., Toronto

Branches in all Principal Cities

B.F.Goodrich

All-purpose air hose is treated rough on Seaway project

THAT hose has earned a reputation as "jack of all trades" on the St. Lawrence Seaway job. It's B. F. Goodrich Type 50 air hose.

Thousands of feet of this B. F. Goodrich hose are in constant use on the Seaway, doing dozens of different jobs and lasting longer doing them. This B.F.Goodrich hose is most often used to supply air pressure to the hundreds of pneumatic tools that drill, dig, vibrate. But it also doubles as water hose, suction hose and cement grouting hose.

The hose pictured above has been carrying air pressure to jackhammers at the Eisenhower Lock for 6 months, is expected to last another year despite the rough treatment it gets. It is pulled over steel, rough abrasive concrete, glacial till, and often is run over by trucks.

Cover of B.F.Goodrich Type 50 air hose is abrasion-and-oil-resisting. Rough treatment won't tear it. Sunlight won't check or crack it. Tube is also oil-resisting, won't break into loose, gummy particles that clog up tools.

Since Type 50 hose was specifically developed by B.F.Goodrich to handle 85% of all air hose needs, chances are it will be the right hose for your job. Call your B.F.Goodrich distributor for details and prices, or write *B.F.Goodrich Industrial Products Co., Dept. M-897, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS

PICTURE OF THE MONTH

A Lift-and-Carry Tilt-Up

• Two cranes with a double equalizer and a six-point pickup place a big wall panel for Aerojet-General Corp.'s new engineering building at Azusa, Calif. The 35-ton panels are cast in stacks of five outside the building and carried to erection position because installation of a floor duct system made it impractical to cast them on the floor slab. Panels are 7½ in. thick, measure 20x33 ft, and weigh 35 tons.

The Indiana State Highway Department **uses 180 Ford Tractors and Ford Industrial Loaders. These units have replaced heavy crawler-tractors for stockpile work. They're easier to operate, more maneuverable, and require far less time and money for maintenance.**

Jimmy A. Garcia, Torrance, California, *(left)* **finds Ford Tractors the best way to handle small yardage jobs. Garcia owns three Fords, praises their short-turn maneuverability and easy back-and-forth shifting.**

R. M. Thompson Company, Clearwater, Florida, *(right)* **tried a Ford Tractor and fork lift on commercial building job, found the savings so great that all materials handling operations were changed to take advantage of it.**

You see more **FORDS**

JOB-SITE REPORT

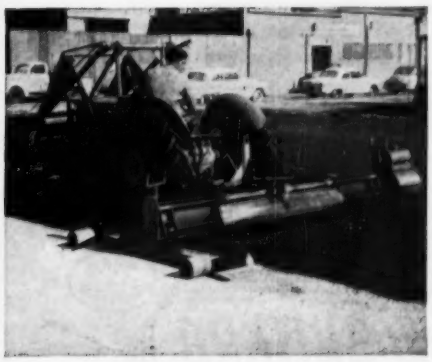
The trend to utility tractors ...and FORD!

Contractors who are in business for profit have, in recent years, started figuring equipment value a new way. No longer is horsepower the major consideration. No longer does a machine have to be bigger to be better. Instead, contractors today analyze the job to be done . . . choose the best method of doing it . . . buy equipment that can handle it most efficiently and economically.

As a result, light industrial wheel-type tractors have assumed an important new role in construction. Today they quickly handle jobs once relegated to slow and costly hand labor. They also handle jobs too big for hand labor, yet too small to justify the continued use of heavy, expensive equipment.

In this utility tractor picture, Ford is first and far ahead! **Ford is first in contractor preference, in tractors in use on construction jobs. Ford is far ahead in design, in multi-job workability, and in tractor value per dollar invested.**

Your Ford Tractor and Equipment dealer can give you all the reasons for Ford's popularity. See him soon, or write to: Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.



Best Paving Company, Monterey Park, California, *(left)* **powers an asphalt spreader with a Ford Tractor. This outfit finish-grades base, then spreads asphalt to desired thickness. Ford Tractors and rotary brooms are also widely used on paving jobs.**

Rich & Company, Bradford, Pennsylvania, *(right)* **uses a Ford Tractor and backhoe for trenching, a front-mounted dozer for back-filling, on 4-inch gas-line job. Over 100 hydraulically-operated tools adapt Ford Tractors for a wide range of jobs.**

...because they save more money

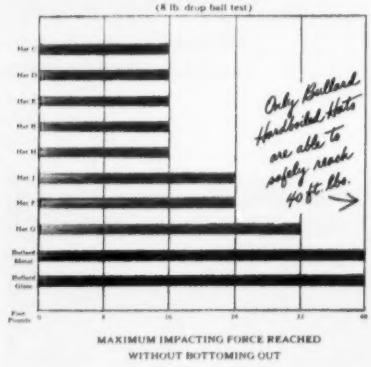
Ford
TRACTORS AND INDUSTRIAL EQUIPMENT

HIS CHANCES MAY BE 33% BETTER THAN YOURS...

You can have all the talk about hard hats being more stylish or light weight or comfortable, because when the chips are down, the only thing that really counts is—will your safety hat get you home safely every night? We can make impressive claims about these and other factors for Bullard "HARD BOILED" Hats, but when you think of Bullard there is one most vital thing we want you to remember... Bullard fiber glass hats are 33% safer! That's right, they've been proven by an independent laboratory, field type tests, to give 33% greater impact protection*... than any of the 10 leading types of safety hats on the market. See this test report. Available from your Bullard salesman or distributor. *Available in fiber glass or aluminum in a wide choice of colors.*

*Based on Report B1-R6, helmet comparative impact performance data.

HELMET COMPARATIVE IMPACT PERFORMANCE DATA
FIELD TYPE TESTS
(8 lb. drop ball test)



MAXIMUM IMPACTING FORCE REACHED
WITHOUT BOTTOMING OUT

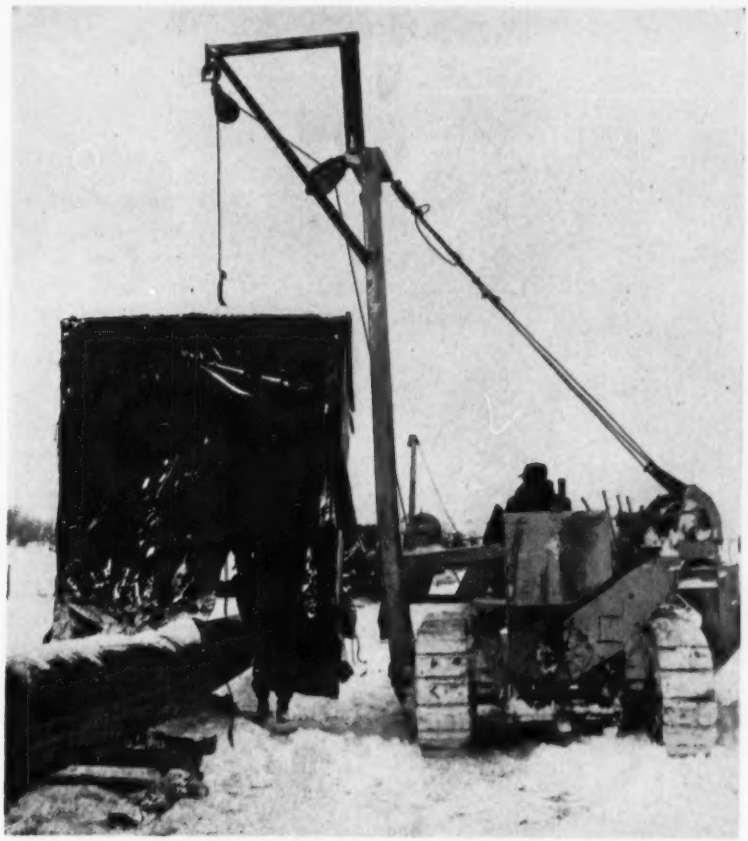
E. D. BULLARD COMPANY Sausalito, California

HARD BOILED®

BULLARD

INDUSTRIAL SAFETY EQUIPMENT

Construction News in Pictures



A Tight Fit

These are close quarters for steel erection, but Price Erecting Co. of Milwaukee has no trouble placing 28-ft steel beams with a Bucyrus-Erie 10-ton Hydrocrane. The crane has hydraulic controls and an extremely short tail swing. The job is a new factory building in Milwaukee.

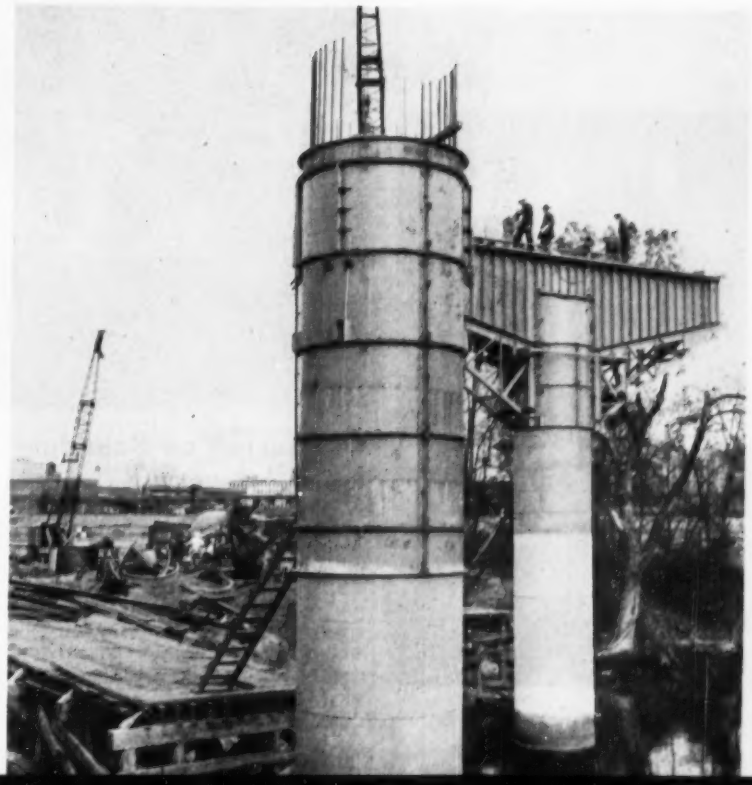
Wind Protection

Sideboom tractor lowers a portable shelter into position so welders can tie together sections of a 22-in. natural gas pipeline across Wyoming. Shelters protect welders against bitter winds that had forced frequent shutdowns. They are heavy fireproofed canvas and plywood hung on frames of 1-in. angle iron and pipe. Contractor is R. R. Fulton Co.

Special Forms

Forms designed by Blaw-Knox for piers of the James River Bridge at Richmond, Va., require no guying. For columns, a 2-ft lap ring is left in place after a pour, held by the concrete it retains. It supports 4-ft rings for the new pour. T-head forms are supported by 4-ft rings with hangers. Bowers Construction Co. and T. A. Loving & Co. are contractors.

continued on next page



Low-Head Hoist ▲

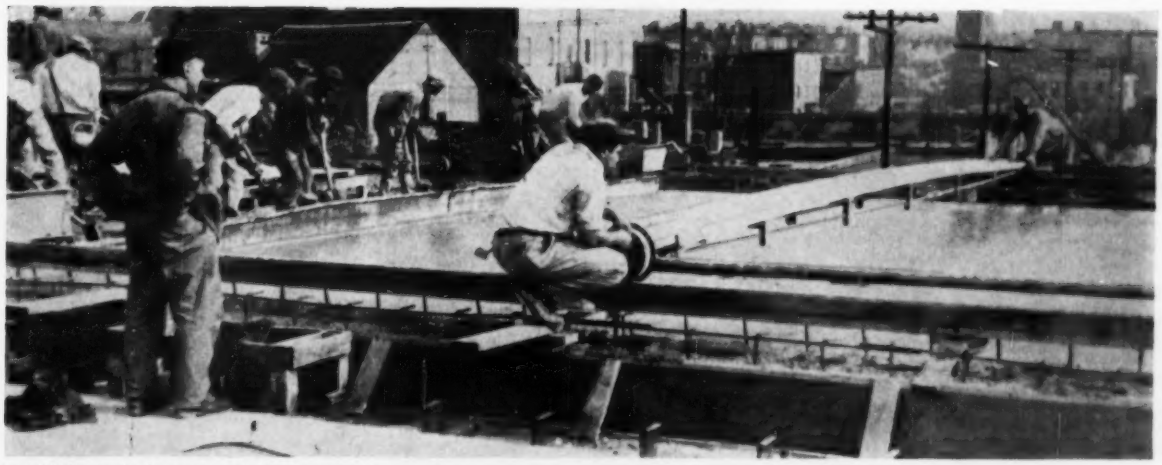
R. G. LeTourneau's Tournacrane comes in handy on this factory rehabilitation project of F. H. McGraw & Co. Studebaker assembly plant at South Bend, Ind., is being converted to jet engine assembly for Curtiss-Wright Corp. Plant has no overhead crane, and its ceilings are too low for boom cranes, but the Tournacrane can make lifts of up to 35 tons.

◀ Pouring on Schedule

Fisher Contracting Co. of Phoenix, Ariz., finds that two-way radio sets in its transit-mix trucks help keep concreting on schedule at a job 20 mi north of Phoenix. Elmer Clark, Fisher vice president, stands with microphone on running board of truck. Fisher holds a $1 million contract to construct building for a division of Sperry-Rand Corp.

Dredged from Bottom

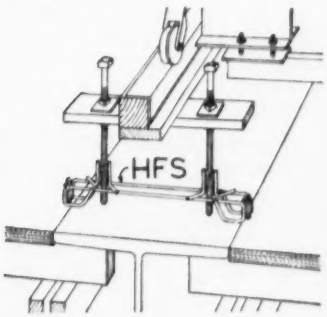
Man-made island anchors south approach bridge to 3-mi bridge-tunnel crossing of Hampton Roads in Virginia. Bridges reach out from either shore to islands built with 5,500,000 cu yd of dredged fill. A 6,860-ft tunnel connects the two islands. In center of island, Merritt-Chapman & Scott Corp., the contractor, is building tunnel approach.



Brookfield Construction Company screeds three lanes at once.

Skillful screeding, Richmond supports pay off in fast, accurate slab finishing

A new screeding technique developed by Brookfield's superintendent, Jack Sorensen, paid off handsomely on this elevated highway extension of the New Jersey Turnpike. An 800-lb., 36-ft., vibrating screed blade was used, with supporting angle-covered 3 x 4's held firmly in place every 7-ft. by Richmond Hanger Frame Screed-Rail Supports. This made it possible to screed three lanes in one operation. Besides gripping the rail with extra firmness, the Richmond bases permitted the heights to be set exactly—from the top—with simple screw-head adjustments.



Brookfield's new technique and insistence on Richmond Screed Supports are typical of the emphasis on proper slab finishing among progressive contractors. Good screeding means a lot more than producing a good looking slab. For, unless the surface is finished without dishes or highspots and with design level maintained, the slab will not drain properly and will not satisfactorily resist weather and wear. In order to maintain levels, screed rails must be accurately positioned and held, so that they will not move during pouring and finishing. That is why the construction industry is showing such preference for Richmond Screed Supports with their adjustability and extra strength.

Equally important to good screeding, is having rail supports that are exactly suited to the job and to the screeding equipment to be used. The Hanger-Frame type used by Brookfield is only one of the complete line of Richmond Screeds.

In both the Richmond Standard Series and the special Series D supports, there is a wide range of sizes, weights and models. There are Richmond supports for use with hand screeds and vibratory screeds, and adaptable to power equipment. There are also Richmond heads to match any rail, whether pipe, T-bar, or special shape.

Whatever the type or size, all Richmond screeding devices, form brackets, and form and curb bolts provide the extra strength that not only saves money but ensures a better job. A number of the Richmond supports are shown at right. You will find all of them, and all Richmond screeding items, fully described in a new handbook just published—along with the full line of Richmond-engineered concrete tying devices, anchorages, and accessories. For your copy, or for help on any specific type of concreting problem, write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 So. Fourth Street, St. Joseph, Mo.

A FEW OF THE MANY TYPES OF RICHMOND SCREED-RAIL SUPPORTS

Richmond Adjustable Screed Chairs come in both the Standard (½" dia.) and D (¾" dia.) Series. Opposing legs that interlock and cannot spread or bend assure even distribution of load. Two new heights, 7½" and 10", have been added in the Standard Series. For unusually thick slabs, there are Richmond Special Height Screed Chairs.

Richmond Offset Screed Chairs have built-in support to take cantilevered load when rail must be placed above surface, as, for instance, when reinforcing steel runs opposite to screeding direction. Richmond Offset Screed Head can be quickly adjusted from above with speed wrench, is double-ended for use with either pipe or T-rail.

Richmond Fill-Type Adjustable Screed Base, used when slab is over soft fill, provides stability with four extended legs driven into ground. Richmond Sub-Grade Stake (not shown) does similar job for heavier loads below grade.

Richmond-Sub-Grade Base provides 2"-high support with unequal bearing plates. It is used mainly with shorter screed bolts or as base for form bolt. Sub-Grade Chairs (not shown), 3½" to 18" high, are also available for soft sub-grade fill.

Richmond Form Bracket, can be nailed to a joist to support a screed bolt extending through the decking. May also be used in conjunction with a curb bolt to support and position a curb form. Consists of a ½" or ⅝" coil welded to a steel plate equipped with four nail holes.

(Advertisement)

JAEGER ANNOUNCES REVOLUTIONARY DIAPHRAGM PUMP

with spring-bottom bowl, free-swinging light weight valves and "kickless" operation up to 7000 gallons an hour

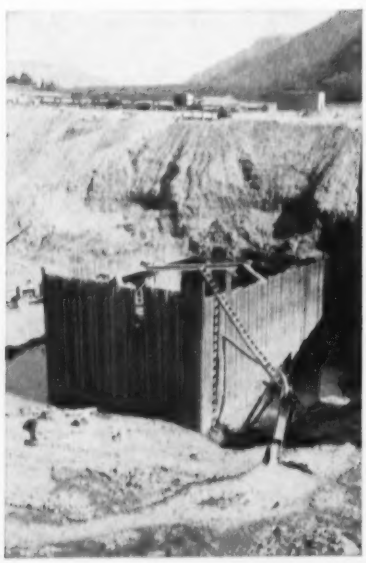
SPRING BOTTOM BOWL (Patents Pending)
Bottom of suction chamber is a heavy reinforced rubber disk, held by compression spring.

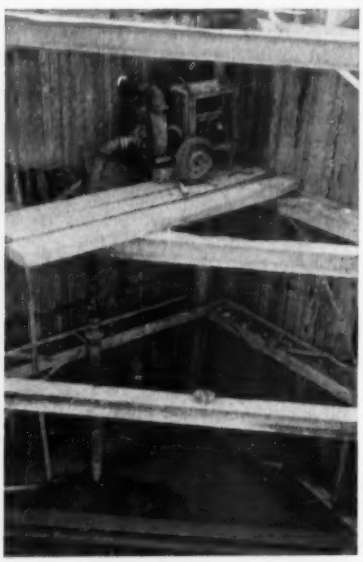
Quick diaphragm change is made by merely loosening 4 bolts and tilting back the pump frame.

HERE IS THE FIRST DIAPHRAGM PUMP WITH A SPRING-BOTTOM BOWL. *Self-cleaning* because the bowl-bottom flexes slightly with each stroke, preventing any build-up of clay or cement deposit. *Shock-absorbing* because the compression spring which holds the bottom yields to protect pump frame and transmission if stones or other objects are sucked into the pump.

Light, free-swinging suction and discharge valves offer minimum resistance and quick closure to an air-tight seat that permits high vacuum pumping (4" pump handles 4000 gph at 25' suction lift; up to 7000 gph at 10' lift). Surge chamber takes "kick" out of suction hose, doubling its life. Built in 3" and 4" sizes with heavy duty air-cooled engines, fully enclosed heat treated gears, pinions and shafts.

HIGHER ACTUAL PERFORMANCE ON 1957 JAEGER "SURE PRIME" CENTRIFUGALS





LATEST TESTS of all sizes of Jaeger "Sure Prime" pumps, reproducing actual job conditions, establish higher capacities and performance never before guaranteed to users. For example, the 1957 model Jaeger 6P pump, at 10' static suction lift, now exceeds 100,000 gph in *actual* performance.

BASE YOUR 1957 PUMP BUYING ON 1957 INFORMATION. Ask your Jaeger distributor, or write today, for the *guaranteed actual performance* of 1957 model Jaeger pumps in the sizes your work requires.

← Discharge of Jaeger 6" pump from bridge pier cofferdam on Peter Kiewit Sons Co. job on Clark Fox River, near Noxon, Mont.

← Pump working inside the cofferdam. Pier area is 30½' x 42' and is near center of river where inflow is heavy.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • SPREADERS • FINISHERS

For fast, low cost liquid asphalt deliveries . . .

NEW DESIGN
Butler asphalt transports

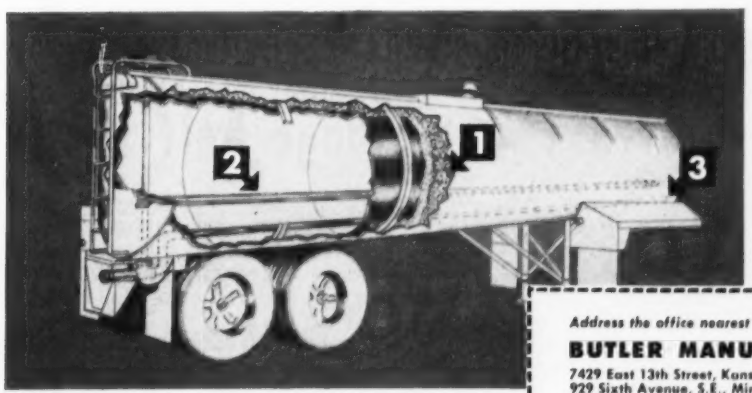
New design 6075-gallon Butler Asphalt Transport for use in Illinois. Butler has made asphalt transports as large as 6500 gallons for areas with high gross weight limits.

Here's an all-new asphalt transport that gives important savings in time and money to operators of asphalt plants and road contractors alike!

NEW payload power—A new design by Butler, manufacturer of a complete line of high capacity liquid transports, makes this transport as much as 3,000 lbs. lighter than most units only three years old. This means hundreds of gallons more legal payload per haul, fewer miles to drive to make deliveries, less investment in extra rigs.

NEW handling ease—Handling and backing are easier because of the new round shape of the tank which gives better visibility to the rear.

NEW low-maintenance construction — Maintenance, cleaning and fast drainage are simplified by the clean bore design of the tank. Strengthening rings located *outside* the inner shell make the tank stronger, yet lighter. Glass fiber insulation covers the entire inner shell and maintains the asphalt at liquid temperatures during long hauls.



Optional Features to Fit Butler Asphalt Transports to Your Operations

1. Steel or high payload aluminum jackets
2. Fire tubes or steam coils inside tank
3. Discharge at front for tractor-mounted pumps

Choice of cylindrical, conical or drop section shape

SEND FOR FULL DETAILS. MAIL COUPON.

BUTLER

Manufacturers of Oil Equipment • Buildings • Farm Equipment Dry Cleaners Equipment • Outdoor Advertising Equipment Custom Fabrication

Factories at Kansas City, Mo. • Minneapolis, Minn. • Galesburg, Ill. Richmond, Calif. • Birmingham, Ala. • Houston, Tex. Burlington, Ont., Canada

Address the office nearest you

BUTLER MANUFACTURING COMPANY

7429 East 13th Street, Kansas City 26, Missouri
929 Sixth Avenue, S.E., Minneapolis 14, Minnesota
1057 Avenue W, Ensley, Birmingham 8, Alabama
Dept. 36, Room 602, 103 Park Avenue, New York 17, N.Y.
Dept. 46, 624 South Michigan Avenue, Chicago 5, Illinois

Please send full details about new high payload Butler Asphalt Transport to:

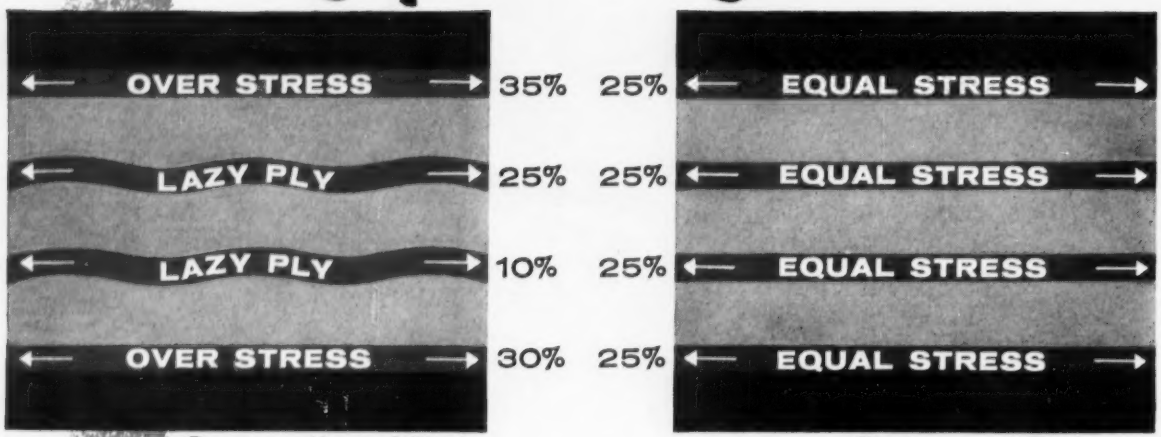
Name _____

Company _____

Street _____

City _____ Zone _____ State _____

Are you paying for "lazy plies" in your belts?



Conventional Belt Construction

Balanced Belt Construction

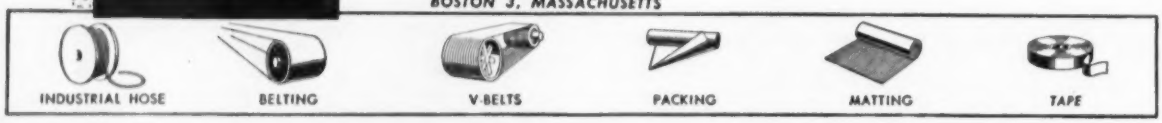
Balanced Belt Construction

Equalizes stress – prolongs belt life

BBC – Balanced Belt Construction – equalizes ply stress . . . *every* ply pulls its share of the load. You get trouble-free service . . . greater economy. BBC is a result of two remarkable BOSTON developments: *Electro-Tensile Control* and *Rotocure*. Electro-Tensile Control electronically controls stress in the plies during manufacture. Rotocure, the only continuous method of vulcanization, assures complete uniformity from end to end.

You cannot afford to underestimate the value and importance of Balanced Belt Construction. Your BOSTON man is ready to demonstrate how BBC prolongs belt life, minimizes downtime, saves you money!

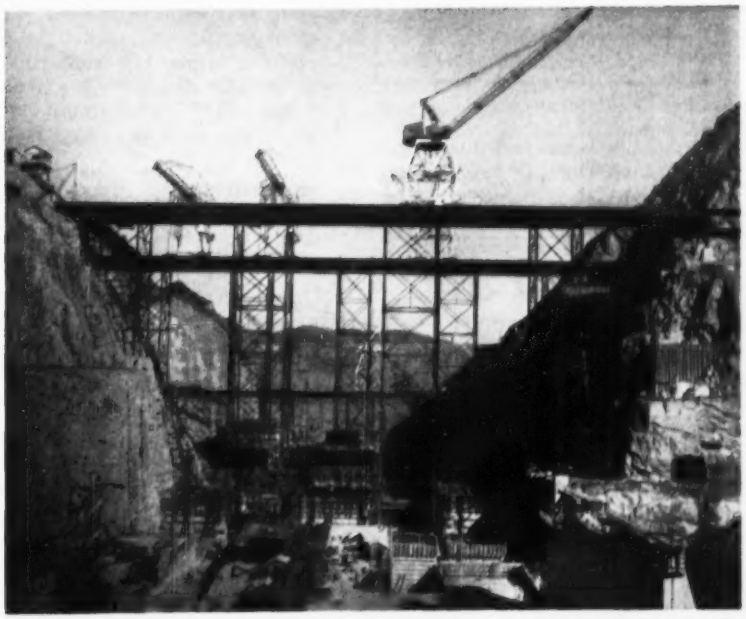
BOSTON BOSTON WOVEN HOSE & RUBBER CO.
BOSTON 3, MASSACHUSETTS



Construction 'Round the World . . .

In Canada

In 100 working days, North American Prestressed Concrete, Ltd., produced all the prestressed stringers, girders, and decking for a pier at Vancouver on two portable prestressing tables set up at the site. The pier has a deck area of about 30,000 sq ft. Approach measures 235x38 ft, and the pierhead is 420x50 ft. The pier will dock its first ship in May.



In India

Concreting of 700-ft-high Bhakra Dam is a high-speed operation. Concrete buckets move on transfer cars from two batching and mixing plants to whirler and double-cantilever cranes mounted on five trestles. The job will require 5,400,000 yd of concrete to be placed within 1,000 working days. Placing now has reached a peak rate of about 350 cu yd per hr.

In Egypt

A Dutch floating crane, the Condor, removes an obstruction from the Suez Canal at El Kantara, about 28 mi south of Port Said. United Nations officials expect that a temporary channel for the transit of ships up to 10,000 tons will be opened this month. But probably the canal will not be cleared of all obstructions for its entire length until late May.

Can you afford

to use big production scrapers for your handyman jobs?

Check the dollars you lose in using a 12-yard scraper to do small-yardage odd-jobs that can be done in same (or less) time with a 9-yard scraper

Some contractors figure, since cost of the operator is the same, they can do handyman clean-up jobs economically with production scrapers. Check your own cost figures and make an actual dollar comparison of these extra expense items. Use your own job costs and see how much it actually costs to use big scrapers on small scraper jobs.

Extra equipment cost . . . depreciation, interest, insurance, etc. . . . . $. . . . . .

Approx. extra operating cost, based on extra horsepower and weight . . . fuel, lube, service . . . . $. . . . . .

Approx. extra maintenance cost . . . tires, repairs, etc. . . . . $. . . . . .

Lost pay-yard production while on odd-job service . . . yards per hour . . . . . $. . . . . .

Every "big" dirtmoving job breaks down into work sections . . . some suitable for "big" equipment . . . some suitable for "small" equipment.

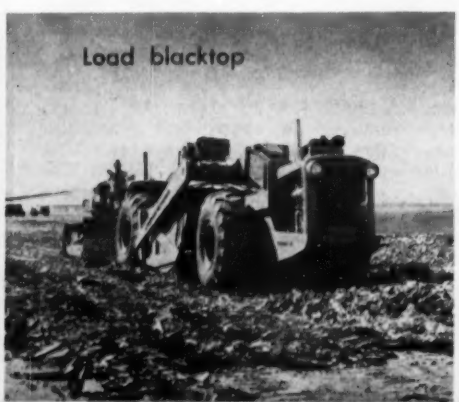
A handyman scraper (like the improved D Tournapull) fills the need for a fast, flexible, self-propelled dirtmover which works economically on both big and small-yardage jobs on long and short hauls.

It can handle pioneer dirtmoving before the rest of your equipment moves in. It can build, gravel and maintain good haul-roads to speed your production dirtmoving. It can develop drainage systems for your water-trapped cuts and fills so that you can work one or more spreads through shut-down weather. It can handle short and shallow cuts, where your big scrapers wouldn't be economical because they couldn't get a full load on a one-run pass. It can do the ditch excavation needed along your shallow-grade cuts.

It can follow production fleets to fine-grade between forms, build access roads and driveways, finish shoulders, spread gravel and topsoil, haul in selected grade material, haul and spread topsoil over median ditches, slopes and shoulders, and perform dozens of other odd jobs like those shown here. By handling these "headache" jobs on a high-speed, economy basis, the handyman scraper cuts delays and expenses that eat into your profits.

When it runs out of odd-job service assignments, the handyman scraper fills in well with any combination of push-loaded production equipment. With pay-load capacity of around 7 pay yards, these small size scrapers produce worthwhile yardage. Their easy loading and dumping characteristics, quick maneuverability, plus speeds to 29.5 mph, enable these smaller rigs to often equal, and sometimes outperform, your big capacity, but bulky and slower-moving, crawler-and-scraper combinations. While the D-size rigs can't equal cost-per-yard of the big 12 to 18-yard rigs on production earthmoving, they will pay their way on production in spare time between "handyman" earthmoving assignments.

On weekends, off-hours, or between more pressing assignments, these handyman scrapers can also give you extra profits by doing small hourly-rate or by-the-job contract work for neighboring farmers and businessmen. They are also the No. 1 tool on subdivision, airport, and other grading contracts for scattered, light-cut work requiring speed, agility and close clearances.



NEW . . . Improved D Tournapull now has increased capacity of 7.3 yards struck, 9 yards heaped. Overall width is reduced to 8', with axle-load well within 9-ton limit, to allow roading without permit. More than 3000 "D's" are in service all over the world.

Handyman Scrapers . . . what abilities should you look for?

1. Roadability via highway without permit is a "must" to facilitate fast, quick moves anywhere, anytime. This calls for meeting BOTH 8' width limitation and 9-ton axle-weight limit.

2. Look for ability to get heaping *push* loads in average dirt, under favorable conditions, in 45 seconds or less loading time. Scrapers should *self-load* to 60% of heaped capacity in 1 to 1½ minutes in dirt of light to medium density.

3. Be sure you can handle capacity loads without overloading clutch, transmission and tires.

4. You need high maneuverability, easy steer, ability to make 90° turns. You also need ability to steer and spread simultaneously on slopes.

5. Frequently working alone, your "handyman" must be able to pull out of mud holes or soft spots without assistance.

6. These utility scrapers should be able to fill against foundation walls, piers, alongside new pavement. They must be easy to steer accurately, able to make short turns, able to spread close against side obstructions.

7. Since you will need them on clean-up for finished grade, you need accurate blade control. Wheels should be inside cutting edge.

8. Because travel on new paving is often involved, minimum weight, and use of tires at minimum inflation are important. This will permit operation over new slab, curbs, sidewalks. Minimum weight and inflation are also important on finishing operations to prevent rutting of finished grades before final surfacing.

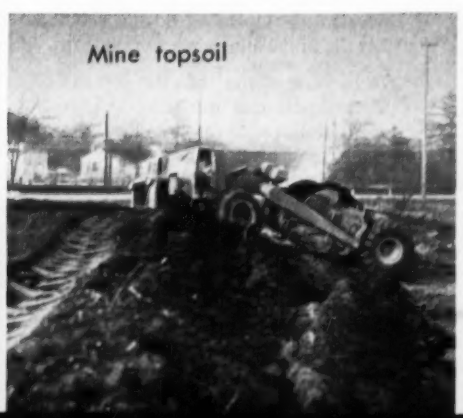
9. Since all rubber-tired machines in this class operate with approximately the same ratings of engine power, clutch, transmission and tires, high machine weight and bowl capacity should be checked against probability of expensive maintenance, excessive downtime and short tire-life.

10. Initial cost is a major item on machines largely involved in non-revenue dirtmoving. In your production fleet, you want the largest scraper that the one-man operator can keep busy, considering depth and length of your cuts. Extra initial cost here, pro-rated on a per-hour basis, is easily recovered in extra yards moved per hour. But, on the "handyman" service, mobility, speed, accuracy and agility are the pay-off factors. Much of your load and spread in this type service involves light cuts and short loading runs. Extra investment in maximum bowl capacity, and heavy construction to carry it, can't pay off against slow-downs in speed and increased maintenance costs on the part-time production-fleet application where you *might* benefit.

11. Remember, you are buying these 138 "horses" primarily for speed and mobility type applications. Every unnecessary pound of machinery and extra load-carrying capacity reduces their ability to "run". It is obvious that, when a tool is engineered for two opposing types of application, it must compromise in both directions. That means you lose efficiency wherever you use it.

12. Check experience, of course. The handyman scraper that has wide use and experience under all the varied conditions of world-wide service is likely to give you most efficient service, minimum downtime, and most profitable performance.

See next page for additional information on the handyman problem ▶



Your handyman scrapers do all these jobs faster, easier, and at lower cost

Grade access roads	Load blacktop
Backfill foundations	Backfill culverts
Mine topsoil	Blade shoulders
Grade driveways	Cut drainage ditches
Shape backslopes	Spread gravel
Strip overburden	Spread topsoil
Load stones, stumps	Fill-in on production
Haul sand	Spread select material
Fine-grade for paving	Finish-grade medians
Fill hoppers	Push-load, and doze

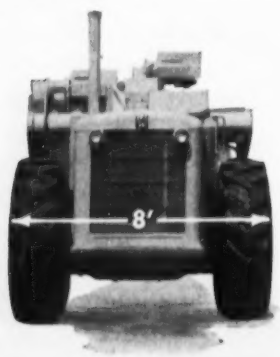
More about
"Handyman" Scrapers

Check this roadable "D" with capacity to 9 yards

Improved to meet your request for reduced width of roading without bothersome permits, the handyman D 'Pull can increase your profits on your small-yardage production assignment. It can also cut costs on pioneering and clean-up, maintain haul-roads and drainage to speed production dirtmovers, cut lost time for heavy production equipment by handling emergency assignments.

New capacities are 7.3 yards struck and 9 yards heaped.

Overall width has been reduced to 8′, so that it now can be roaded anytime without permit on highways requiring 8′ maximum clearance. Axle-loads are well under the 9-ton roading limit.



Other improvements include a new tailgate which eliminates "fall-over" of material. Higher apron lift gives easier ejection of sticky or bulky material. Operator has better load visibility. Many other improvements have been built into the "D" over the past 9 years, as a result of experience with over 3000 "D's" working in all parts of the world.

Speeds to 29.5 mph on rubber, allow it to travel anywhere . . . work faster . . . move more earth in less time than bigger tractor-scraper combinations costing thousands of dollars more than the "D"

It loads itself or can be push-loaded. It hauls earth and other materials a hundred feet or several miles economically. Optional 8′ dozer blade handles miscellaneous dozing jobs.

Here are some of the ways D Tournapull can make your investment dollars go farther:

1. Handles wide variety of jobs

Do-it-all "D" does pioneering, ditching, rough-grading, backsloping, spreads gravel and topsoil, speeds through dozens of other clean-up or small-yardage production jobs. Its easy mobility and maneuverability (90° turn) make it ideal for subdivision grading, landscaping, and for building driveways, streets and alleys. Versatility makes "D" economical on many kinds of work now done with crawlers, bigger units, or several special tools. It does big jobs or little jobs. . . reduces headaches and delays . . . earns extra profits by doing sideline work by day or hourly rates in spare time.

2. Works alone or in fleets

Tournapull self-loads, hauls, and spreads . . . can handle the complete earthmoving operation. The "D's" can push-load one another in fleet operation. . . or they can be push-loaded by any tractor or motor grader. "D" can also work profitably along with bigger scrapers in your heavy earthmoving production fleets.

3. Travels fast around the job, between jobs

You don't need a permit or a truck-and-trailer to haul D Tournapull to its assignments on your job. There are no loading and unloading delays. Mobility allows "D" to reach any assignment on the largest project in just a few minutes. 5 miles is less than 15 minutes away. Also

the improved D Tournapull, meeting 8′ roading clearance and 9-ton axle-load limit can "run" anytime from job-to-job via highway, city streets, or cross-country at speeds to 29.5 mph.

4. Outproduces crawlers

Three to four times faster speeds allow "D" to match and often outwork crawler-scraper teams costing 20 to 40% more than D Tournapull. With precision push-button control, "D" does finishing work faster, easier.

5. Works in soft going

Exclusive Tournapull differential transfers power automatically to gripping drive-wheel when other wheel starts to slip. You get better traction in muck, sand, soft material throughout haul cycle for dependable performance under toughest job conditions.

6. Turns in less space

Compact design, power-steer through geared king-pin, full 90° turn, enable "D" to work in restricted quarters and on narrow fills. Jack-knifing is eliminated. 2-wheel prime-mover concentrates weight on drive wheels for better traction in slippery footing.

7. Lowers maintenance costs

Replacing the 450 to 500 moving track parts of crawlers with Tournapull's 4 rubber-tired wheels naturally reduces your repair costs. Power travels all the way on enclosed anti-friction bearings, always lubricated, always sealed from dirt. There is less friction, less wear, less lubrication cost.

8. Less weather delay

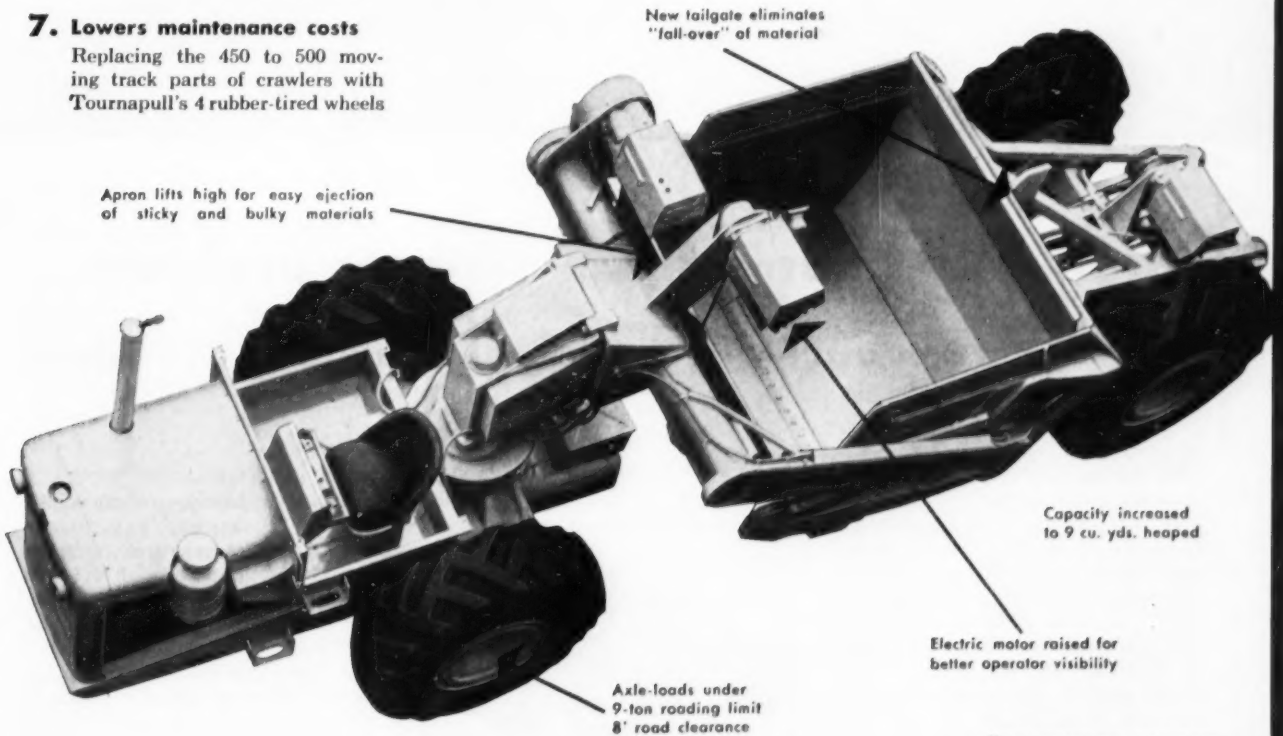
Big, low-pressure, 18.00 x 25 tires give good traction in soft going. Exclusive power-transfer differential and 90° turn, geared king-pin power-steer allow "D" to "walk" out of trouble. Tournapull works where other rubber-tired earthmovers stall. It's a handyman that's ready to clean-up the odds and ends of tough going that hold up big production tools. On many jobs a "D" can pay for its entire cost in a single season by just maintaining good drainage and fast haul-roads.

9. Safe and easy for operator

Big disc-type air-brakes on 4 wheels (2,822 sq. in. braking surface), power-steer, simple trouble-free finger-tip electric controls, low-pressure shock-absorbing tires, bucket-type safety seat . . . all make busy work-days easy for operator. "D" safely travels steep grades, narrow fills, in close clearances, around sharp corners, and through conjested city and fast open-highway traffic.

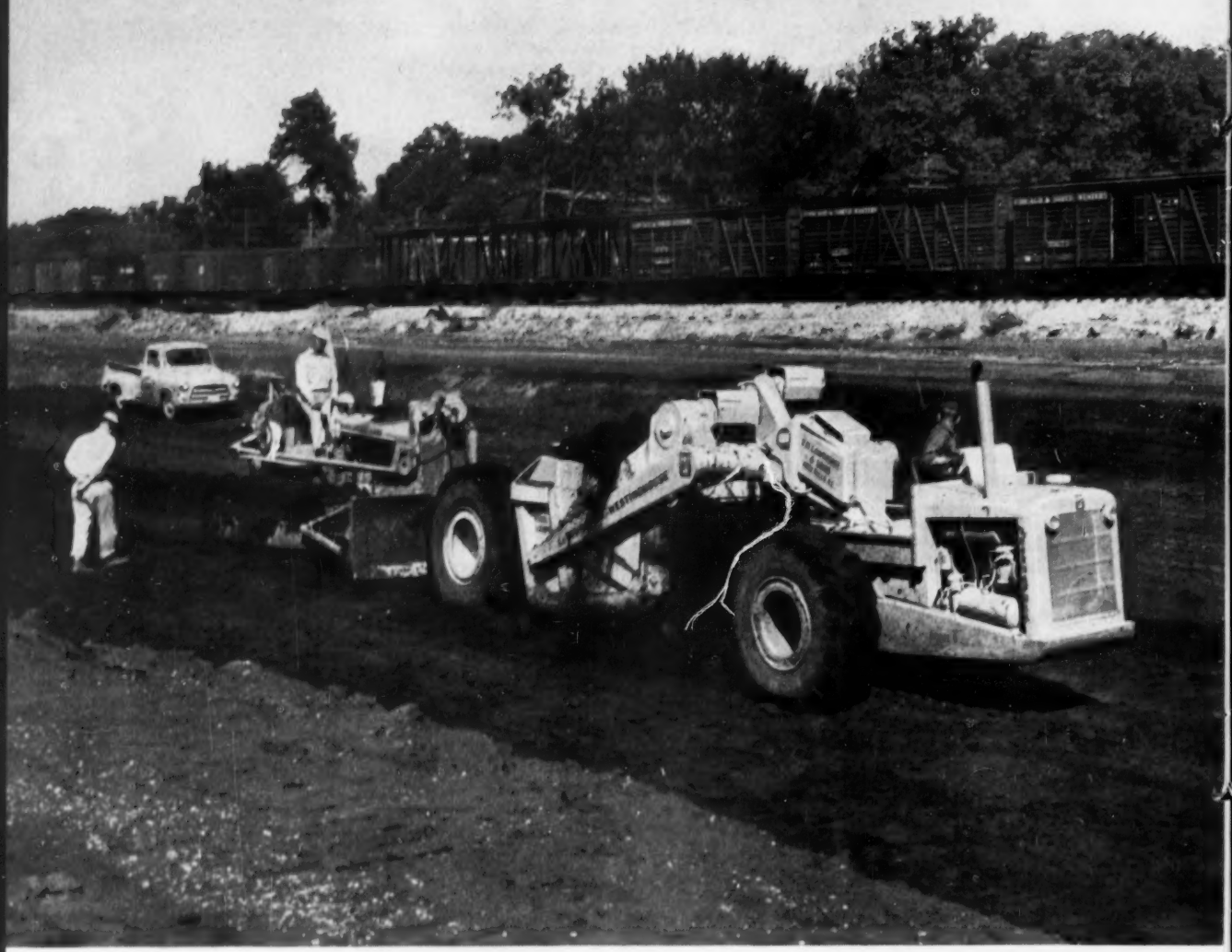
10. Interchangeable equipment

Scraper interchanges with other hauled units . . . rear-dump, side-dump or flat-bed haulers. There is also a 10-ton lift-and-carry crane, a winch-and-arch for skidding poles, logs, pipe. Dozer blade or snow-plow attaches to front-end. It's easy to keep this handyman always busy.


New tailgate eliminates "fall-over" of material
Apron lifts high for easy ejection of sticky and bulky materials
Capacity increased to 9 cu. yds. heaped
Electric motor raised for better operator visibility
Axle-loads under 9-ton roading limit
8′ road clearance

See owner reports on "Handyman" Scrapers on next page ▸

More about
"Handyman" Scrapers



Study your "handyman" scraper problem...

check performance with other D Tournapull owners

We've been in this specialized business of engineering, building and maintaining a fast-traveling, handyman scraper for small-yardage and scattered dirtmoving assignments for over 9 years. Our field engineers have time-studied jobs like yours in about every kind of dirt, terrain, and climate the world around. We've continuously checked parts orders, as well as maintenance-and-repair records, on thousands of these machines. We've applied all this know-how of your earthmoving problems, and our machine performance, to perfect a high-speed, highly maneuverable, thoroughly dependable dirtmover for your job maintenance, pioneering, clean-up, subdivision grading, landscaping and other small-yardage dirtmoving assignments. Our "D" is a proven rig and we think it will make you the best buy on the market. Why not see for yourself? Write or call your nearest distributor for price and delivery.

Handle production, clean-up work

On 45-acre Hillcrest Estates Subdivision, Vallejo, Calif., 3 "D's" did clean-up for J. S. Equipment Co. They handled light cuts for streets, cleaned-up and filled around houses, did fine grading, and spread topsoil.

Fine-grades between forms

When Winkelman-Tompkins-Jones, Plattsburgh, N.Y., built runways for the Plattsburgh Air Force Base, blow-sand left imperfections in grade between forms. D Tournapull leveled narrow surfaces quickly and accurately.

Speed finish-work

S. J. Groves & Sons Co., Minneapolis, assigned 5 "D's" to finish-work on 12½ miles of Indiana Turnpike, near Howe. Here a "D" levels shoulders. Low-pressure tires roll over new pavement without causing damage.

"D" moves 60%; 5 trucks, 40%

Extending Paipa, Colombia airport runway, one "D" moved 180,000 yds. of fill for Pablo de Narvaez Ingeniero Contratista, Bogota. ¾-yd. shovel and 5 trucks moved 120,000 yds. "D" averaged five 5,350-ft. cycles hrly.

Build outdoor theater bowl

To change gravel-pit into a drive-in amphitheater, George O. Walker Construction Co., Dallas, Tex., moved 120,000 yds. of sand, caliche in 60 days with 5 "D's". Machines averaged 2,400-ft. cycles in 3 min. 22 sec.

Build earth coal-storage bins

Gibraltar Coal Company, Central City, Ky., stores coal in earth cones to avoid stockpile maintenance. Building cone pictured, 2 "D's" completed 5,160-ft. cycles delivered 6.7 yds. of clay each, in about 7 minutes.

Put turnpike finishing ahead

Near Avery, Ohio, 3 "D's" hauled fill for sub-grades, fine-graded, spread topsoil, did all clean-up on 4½ miles of Ohio Turnpike, to help D. R. Smalley & Sons, Inc., Celina, Ohio, complete finish-work ahead of schedule.

Lick steep grades, spongy footing

Hauling 675 ft. uphill, over soft ground, 2 "D's" averaged 190 6½-yd. loads of clay in 10 hrs. for Graves Brothers Co., Pine Bluff, Ark. They were rebuilding 2½ miles of State Hwy. 1, leading to an Arkansas River levee.

Maneuver on dikes, 14-ft. wide

Hauling fill to build dikes for 1200-acre Wildlife Refuge near Oceanville, N. J., 5 "D's" owned by A. D. Beyer & Sons, Inc., Williamstown, traveled 26,600-ft. cycles in 19 minutes, made 180° turns in 14-foot space.

Mine glass and foundry sands

At pits owned by Industrial Sand and Engineering Co., Ltd., Pretoria, South Africa, 2 "D's" mine 15,500 tons of sand monthly. Self-loading rigs average 0.8-mile cycles (pit to washing plant) in 4.4 minutes.

Reclaim flood-damaged farm

Repairing flash-flood damage at a 155-acre Mass. tobacco farm, 3 "D's", owned by Mel Shalloo, Lowell, removed silt, filled gorges, replaced topsoil. One-month job involved 112,000 yds. of sand, silt, loam, and gravel.

42 jobs in 27 months

Reco Construction Co., Gardnerville, Nev., used 3 "D's" on 42 widely scattered earth-moving jobs in 27 months. Picture shows Naval Air Station, Fallon, Nev., where "D's" completed three 4.4-mile cycles hourly.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1261-G

Today's improved "D" outperforms these earlier models.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

THERE'S AN
INSLEY
WORKING NEAR YOU

on a sewer project

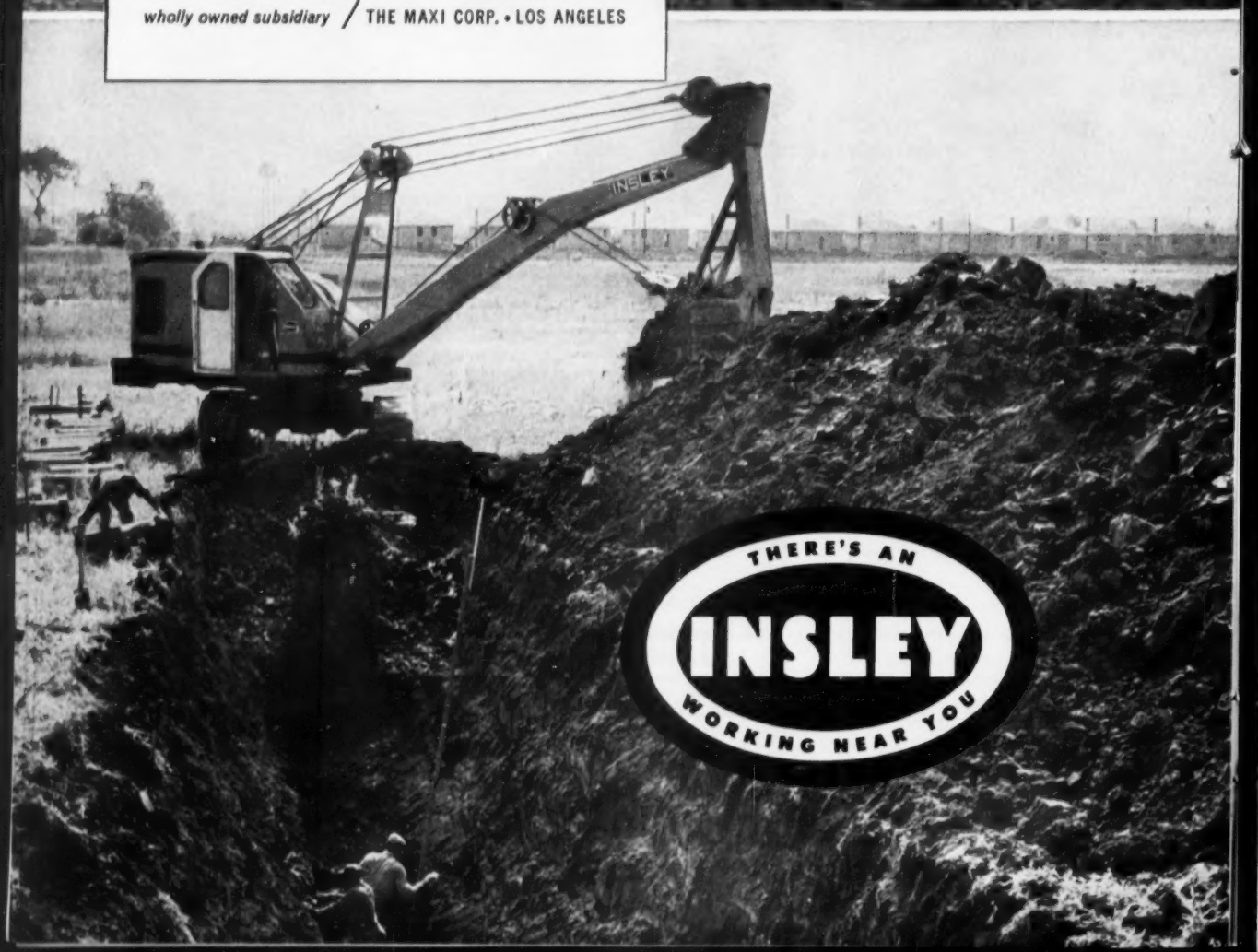
The Insley type WB is recognized as a proven performer by contractors everywhere. Insley's proven design characteristics give the contractor a dependable machine—simple to service, easy to maintain. The WB is convertible to all front-end attachments and available with crawler, Maxi self-propelled carrier, and lorry mountings. Gasoline, diesel or electric power.

LET YOUR INSLEY DISTRIBUTOR SHOW YOU AN INSLEY AT WORK

For additional information, write the Insley Manufacturing Corporation, Indianapolis, Ind.

INSLEY MANUFACTURING CORP. • INDIANAPOLIS, IND.

wholly owned subsidiary / THE MAXI CORP. • LOS ANGELES



THERE'S AN
INSLEY
WORKING NEAR YOU

Construction Methods AND EQUIPMENT

MARCH, 1957

VOLUME 39 • NUMBER 3

HENRY T. PEREZ, Editor

No Profit in Secrecy

EVERY NOW AND THEN when we're out looking at jobs to pick up editorial material we come across a construction company that does not want to divulge any information about its field operations. The reasoning usually goes something like this:

"We've got a good thing here, and we want to keep it to ourselves. After all, we pioneered this method [or developed this gadget, or rejiggered this machine, or figured out this new use for this material] and we don't want our competitors to find out about it. We let 'em do that, and we go broke."

Well, that's pretty phony reasoning, of course. Your day-to-day competition usually knows pretty darned well what you're doing, sometimes even as well as you do. He looks your job over, you check on his. You each hire workmen who have been with other contractors. They know and talk freely about what they've done and seen. Why, then, the late attempt at secrecy?

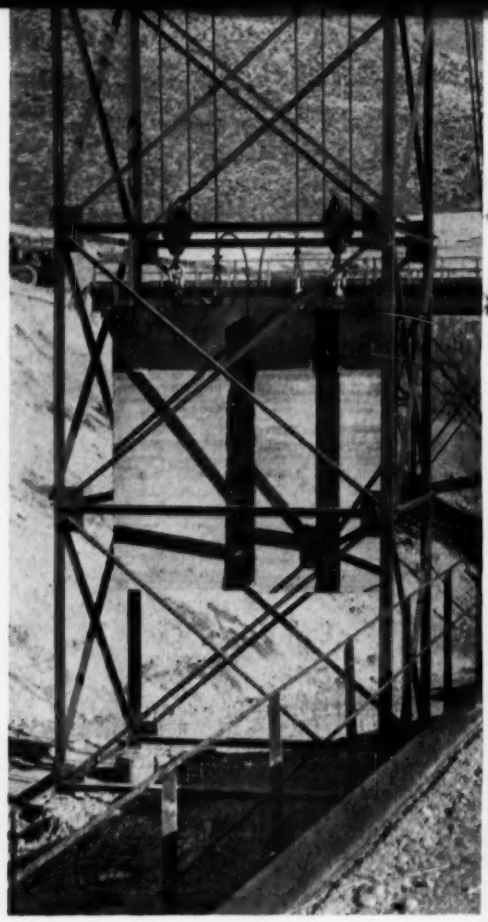
After all, it is not competition on the current job that is the problem. And isn't worrying about it for the future job a tacit admission that you are afraid you can improve no further? The successful contractor is constantly bettering his operations. He's not afraid of talking about today's developments because he's already working on tomorrow's. He's making sure he's going to stay a couple of jumps ahead of his competition whoever it may turn out to be.

Actually, cooperation with the editors of the technical press is a tremendous help to all the contracting industry. Giving details of your job won't tell a competitor around the corner anything much new, but it may alert a non-competitor half a continent away to a better method of doing something. You, likewise, can learn from the operations of contractors in other areas. It is thus that we advance the art of construction.

Construction is the largest industry in this most advanced country in the world. Both our industry and the United States have become great through the free interchange of knowledge—knowledge pooled for progress.

To build a 13-mi causeway across Great Salt Lake, Morrison-Knudsen operates a giant conveyor system that moves an average of 4,200 tons of gravel per hr. Before the job is completed, it will handle a total of 30,000,000 tons of fill.

SHOVELS load 8 cu-yd bites of gravel into trucks to be hauled to the intake end of the $2-million high-speed conveyor system.



TRUCKS dump into hoppers. Rock over 8 in. is crushed here before it reaches conveyor.

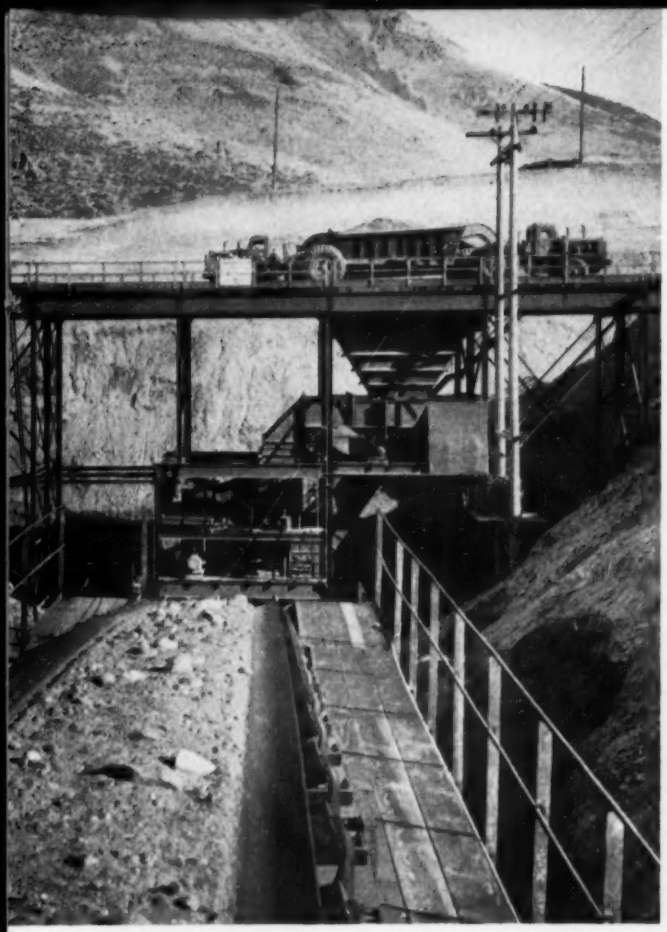
Conveyor Moves a Mountain

ONE OF THE BIGGEST earthmoving jobs in history is getting into high gear on the shore of Great Salt Lake in Utah. There Morrison-Knudsen Co., Inc., is building a 13-mi rock and gravel causeway for the Southern Pacific Railway that will require a total of 32,000,000 cu yd of material.

The $49 million causeway across the lake will replace a timber trestle erected in 1902. It will be 35 ft wide at the top and 450 ft wide at the base. Depth will vary from 46 ft to 85 ft. The job will require at least three years.

Everything about the job is huge. To start it off, Morrison-Knudsen men packed 570,000 lb of dynamite into eight separate coyote holes tunneled 150 ft into a cliff and blasted out 1,200,000 tons of rock. M-K also assembled a fleet of tugs, barges, and smaller craft; built a construction village—known

RADIAL STACKER takes gravel from main conveyor and stores it in stockpile 70 ft high. Two tunnels under stockpile each house a 72-in. conveyor fed by overhead feeders.



CONVEYOR speeds gravel 1.8 mi at a rate of 850 fpm from supply source back in the hills up to the western shore of the lake. →

into a Lake

TUNNEL CONVEYORS carry gravel 250 ft to the shore of the lake and dump it into barges for placement in the 13-mi causeway.

Rock Fill Gets Separate Handling

as Little Valley—complete with school and shopping center for a population of 1,000; and contracted for the installation of a 1.8-mi conveyor system that will move a total of 30,000,000 tons of gravel from hills behind the lake to the shore and load it on barges.

The $2.1 million conveyor system is the feature of the job. It is the largest ever built in terms of ton-miles per hr capacity. It consists of two main cross-country conveyor units plus 11 smaller conveyors linked together to provide a continuous flow of material.

The belts on the main conveyors are 54 in. wide and travel at 850 fpm, about twice the normal speed of conveyor belts. They handle an average of 4,200 tons of gravel per hr.

To prevent excessive belt wear at these high speeds, accelerating conveyors 30 ft long and 60 in. wide feed on to the main conveyor at the loading hopper and at transfer points. The accelerator belts move material at a rate of 500 fpm.

At the lakeside end of the main conveyor system, a radial stacker takes the gravel and stores it in a pile 70 ft high. The stacker is equipped with a 54-in. belt conveyor mounted on a 164-ft radial boom. It is capable of building a 250,000-ton storage pile.

Tunnel Conveyors

Under the storage pile are two tunnels, each housing a 72-in. wide conveyor. Together they can load a 3,000-ton barge in 15 min. These conveyors run at 600 fpm and have a combined capacity of 12,000 tons an hour. Material is fed to the tunnel conveyors by 10 overhead feeders which control the rate of delivery to insure a constant flow of material at full capacity without spillage.

The tunnel conveyors carry the gravel 250 ft to the edge of the lake and dump it into barges. The conveyor system was manufactured and installed by Hewitt-Robins, Inc. It is set up so that it runs down-grade for most of its length.

ROCK FILL comes from a nearby cliff where Morrison-Knudsen crews packed 570,000 lb of dynamite into eight separate coyote holes and blasted out 1,200,000 tons of rock.

SHOVEL loads rock into truck that will haul it to the rock loading dock. There, some of the rock is stockpiled, and some is dumped directly into barges for placement.

TRUCK dumps rock into center of barge from a ramp at the rock loading dock. Gravel, delivered to the shore of the lake by the conveyor system, is loaded at a separate dock.

TWO DERRICKS fill the end sections of the barges at the rock loading dock. Morrison-Knudsen has four 1,000 cu yd capacity flatbottom barges and six 3,000-ton dump barges.

Once it gets rolling, gravity carries it along, and it generates electric power—instead of consuming electricity.

A special drive mechanism consisting of a drive pulley and a hold-back pulley transmits power to the conveyors and controls their descent. When power is required to drive the conveyors, the drive pulley is engaged automatically, and the hold-back pulley remains freewheeling. When the force of gravity is enough to keep the conveyors rolling, the hold-back pulley automatically takes over to regulate the speed of the conveyors.

Power generated by the conveyor system is fed to the electric shovels that dig gravel out of the mountain. The shovels load trucks that haul the gravel to hoppers at the dumping station where the conveyor system begins. Stone 8 in. in dia and over is crushed at the dumping station before it goes into the hoppers.

Two Sections

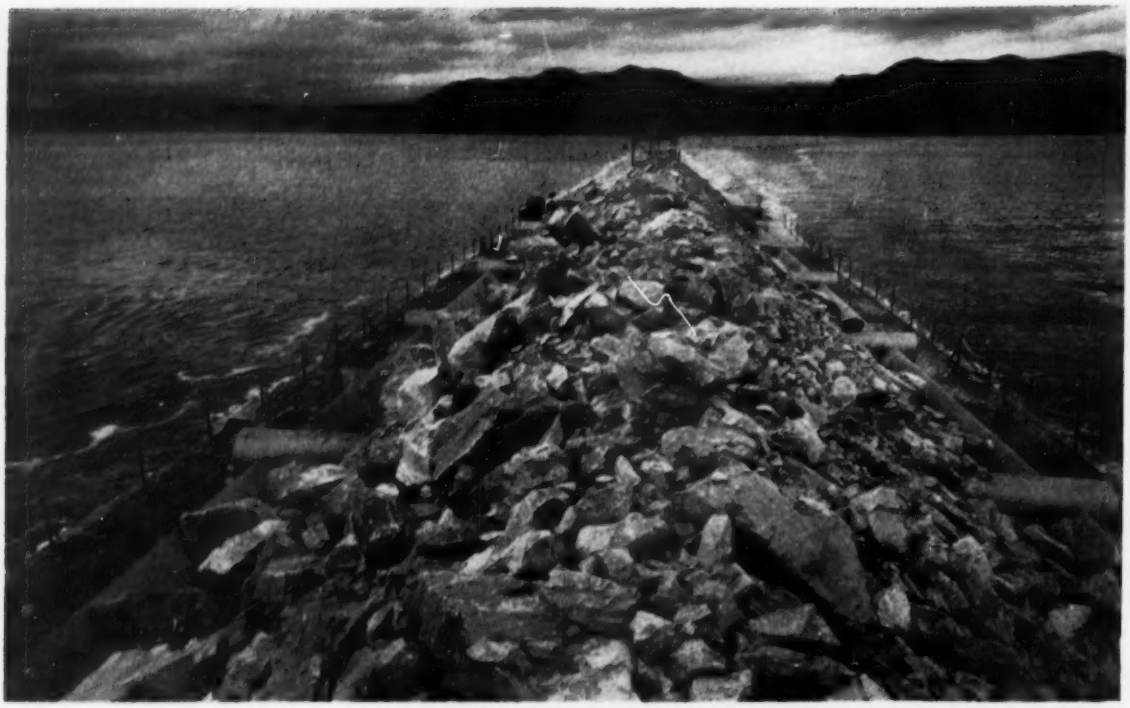
The causeway will be built in two sections. The first 4 mi out from the western shore of the lake —the side where all the work is going on—will be pushed out by bulldozers teamed with a Southern Pacific work train.

The remaining 9 mi will be laid by barge. Loading the barges takes place at two separate docks on the west side of the lake. At one dock, trucks dump rock from a ramp directly into the center of the barges while two derricks load the end sections. At the other dock, the two tunnel conveyors load barges with gravel.

M-K has assembled a formidable fleet to handle the water-borne part of the operation. There are six 1,000-hp tugboats, four 1,000-cu-yd capacity flatbottom barges, six 3,000-ton dump barges each 250 ft long and 55 ft wide, and a number of smaller craft for ferrying and supervisory work.

The big dump barges—said to be the largest drop-bottom barges ever built—were fabricated on the West Coast and assembled at the site. Each can do as much work in one trip as a 52-car work train can do in a full day. Average round trip time for the barges ranges from 3 to 6 hr. Control towers sitting on piles in the lake position the barges for dumping.

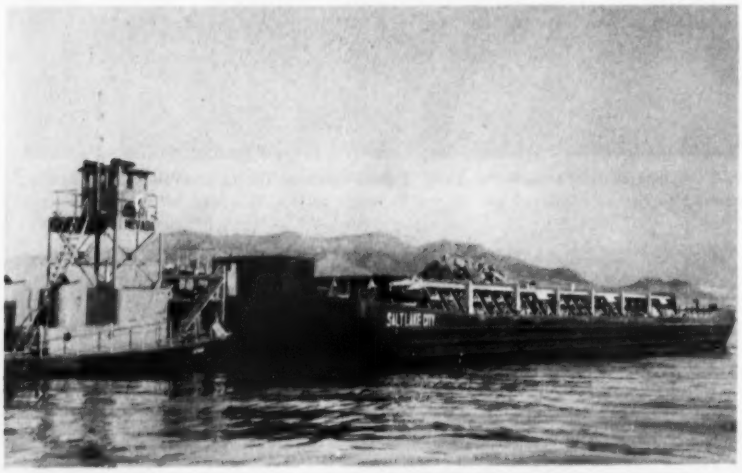
These big barges will place the bulk of the fill. When the top of the fill reaches a point 10 ft below



BIG BARGES are 250 ft long and 55 ft wide, probably the largest drop-bottom barges ever built. Each does as much work in one trip as a 52-car work train can do in a day.

CONVEYOR MOVES MOUNTAIN . . . continued

Barges Place Fill



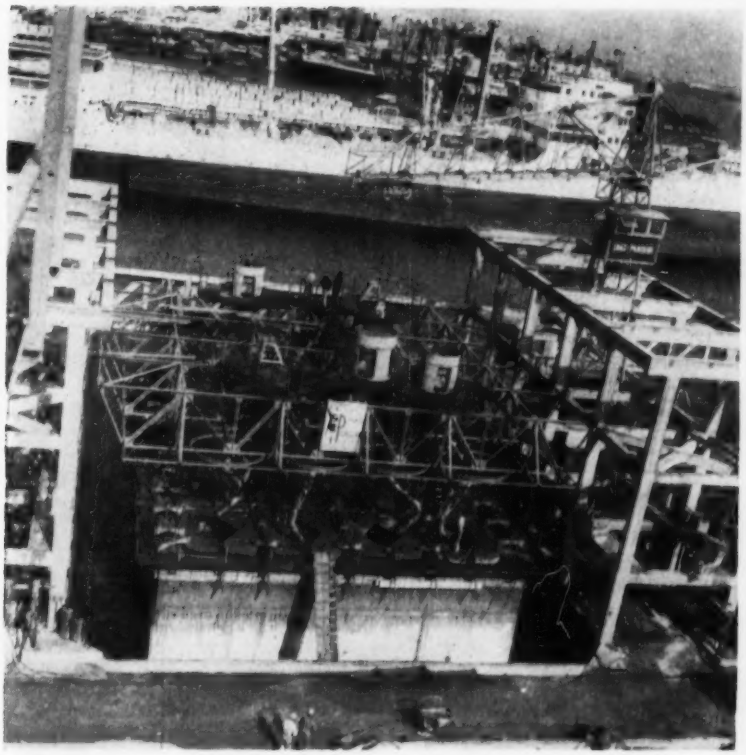
TUG moves barge across the lake into position for dumping. Average round-trip time for barges is from 3 to 6 hr. They will place fill for 9 mi of the 13-mi causeway.

ELEVATED pilot house in tug gives skipper good view for spotting and dumping barge.

the surface of the water, the flat-bottom barges will take over and build it up to about 2 ft above water level. Then trucks will add the final 6 ft and top it off with a rip-rap of large rock to protect the causeway against waves.

To provide a solid foundation for the fill, M-K is dredging a trench 20 to 35 ft deep in the bottom of the lake with two dredges brought in from Alaska. A total of about 15,000,000 cu yd of soft unstable material will have to be dredged out to reach the stiff clay and hard rock salt below the bottom of the lake that will support the causeway.

The causeway will run parallel to and about 1,500 ft north of the present timber trestle. It will provide a double-tracked roadbed on which Southern Pacific trains can move at regular speeds. Now passenger trains must slow down to 30 mph and freights to 20 mph to cross the single-tracked timber trestle.



HUGE CELLULAR concrete boxes built by slipform methods for a new breakwater are floated to sea off Genoa, Italy, and sunk in place.

Four of the boxes are constructed at a time in the compartments of a long pier. They measure 62 ft long, 46 ft wide, and 41 ft high.

At the pier, the base of each box first is constructed on a suspended platform. Then the walls and cells are poured simultaneously with slipforms. As the box builds up, the platform is progressively lowered by winches into water, allowing buoyancy to accept most of the load.

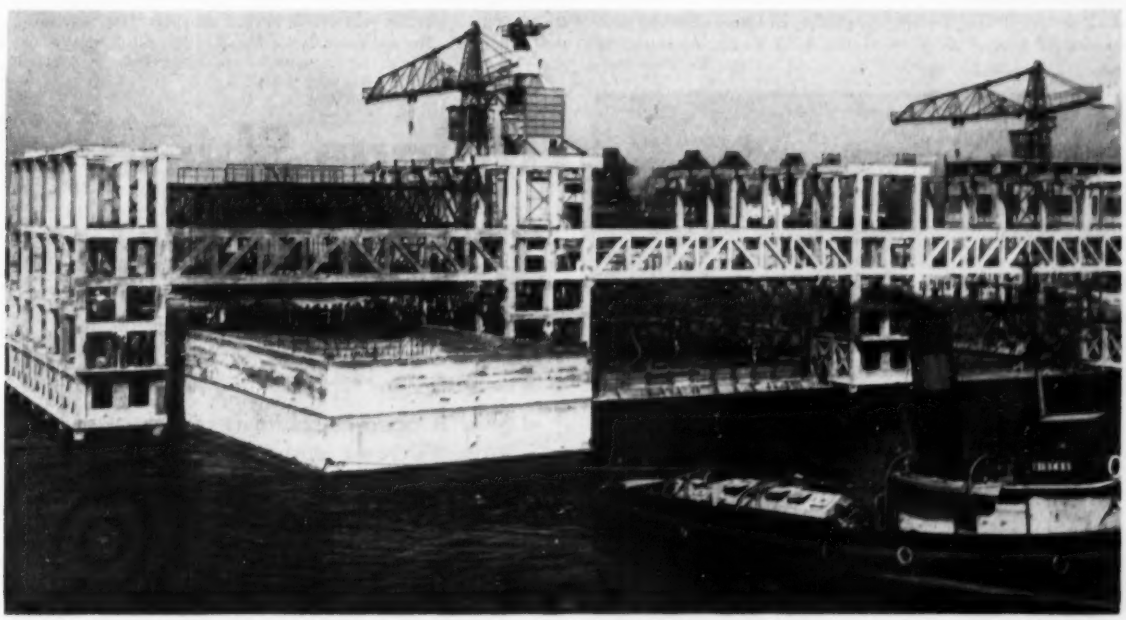
Hanging above each box is a steel-truss framework which supports concrete placing equipment. Buckets swung by a crane are dumped into one of four frame-supported hoppers, each of which feeds four revolving pipes that chute concrete directly into slipforms.

When each box is completed, its supporting platform underneath is lowered, and the box floats. Tugs tow it to sea where it is sunk along with many others to build a 9,200-ft breakwater. Landed on a prepared bottom at a depth of 47 ft, the boxes later are filled with sand.

Dr. Luigi Gai is general manager for the contractor, Fincosit of Genoa.

To Construct Breakwater...

Slipform-Built Boxes Floated to Sea and Sunk



TUG TOWS completed concrete cellular box to sea for sinking at breakwater. In adjacent pier compartment, slipforms build another box. Alongside, a third box gets started on suspended platform. As walls rise, platform lowers box into water.

JACKS SHOVE SHIELD'S SHELL by pushing on tunnel ribs. Ribs have been strutted back at six points to take rams' thrust. Apparatus at crown holds supporting yoke plumb as shell advances, later will take shell's load off yoke and move latter ahead.

Unique Shield Tunnels Sand

- Horseshoe shaped, it consists of an outer shell and an inner support.
- Shell is open on bottom, so yoke-like bent transmits crown load to tunnel floor.
- Yoke and shell are moved ahead alternately to drive 153 ft of 11-ft tunnel daily.

LOADER MUCKS SAND, depositing it in hopper of belt conveyor. At tunnel face, miners who excavate material by hand shovel are protected by shield's hood and breastboards.

YOKE SUPPORTS SHIELD'S SHELL by transmitting crown load to tunnel floor. Yoke's top carries roller on which shell's crown girder rides; its two legs are fitted with hydraulic foot jacks. Rear-facing pipes will hold staging for setting ribs, lagging.

IN LOS ANGELES, contractors driving a 12-ft horseshoe sewer tunnel were advancing the heading only 45 ft in a 24-hr day. Now they've jumped the daily advance to as much as 153 ft per heading. Secret of this phenomenal increase was a change in attack from the forepoling method to use of a shield.

The tunnel, 20,500 ft long, is part of the North Central Outfall Sewer. It is being driven as a 12-ft horseshoe bore with a 9-ft base width. Later it will be lined with a minimum 10½-in. thickness of concrete.

Throughout much of its length the tunnel is in a loose, caving sand. To drive through this material, joint-venture contractor Arundel-Dixon-Kemper started forepoling from one portal. Miners drove timber 3x8-in. spiles ahead to prevent excess run-in, and placed sets of 6-in. 20-lb WF ribs. This method netted an advance of only some 15 ft per shift.

Meanwhile, a shield was being devised and built in the yard of one of the contractors—Kemper Construction Co. Put to work to start advancing a second heading, the shield was so successful that another one was fabricated to replace forepoling in the first heading.

Tunnel Driving

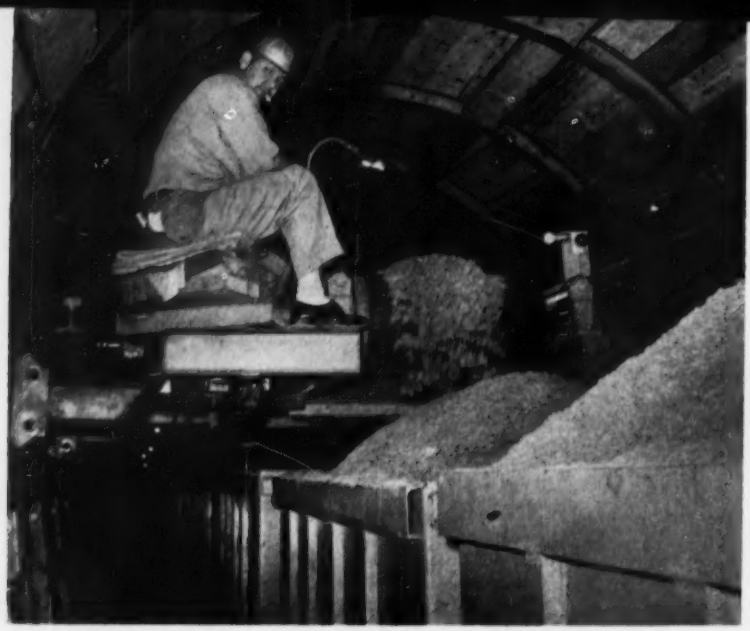
With the shield, a heading has been advanced a maximum 153 ft a day. In addition, because practically no ground is lost, it has been possible to reduce the tunnel supporting ribs to a 4-in. 13-lb WF section. Solid 2x8-in. lagging spans between the ribs, which generally are on 4-ft centers.

The shield is a two-part device: An outer shell that is jacked ahead and an inner support on which it rides. The latter remains stationary during a shove, but is moved up after each advance.

The shell section is an open-bottom horseshoe-shaped structural steel frame that conforms to driven tunnel section. A ¾-in. steel skin-plate sheaths it on sides and arch. The skin-plate extends forward as a hood to protect miners excavating the face and backward as a tail within which tunnel ribs and lagging can be erected.

Six hydraulic jacks set into the shell section push against previously erected tunnel ribs to shove it ahead. To distribute the jacking load, a line of 3x8-in. timber collar braces is set between ribs at each point of thrust.

The shell section also carries four



CONVEYOR LOADS MUCK CARS about 130 ft back from the face. Signal-light system (right) provides communication between operators of conveyor and locomotive of six-car train.

AIR HOIST DUMPS MUCK CARS from trestle near portal. Hoist is mounted on rolling gantry so it can be moved when spoil pile gets too big. Contractor sells this sand for fill.

UNIQUE SHIELD TUNNELS SAND... continued

other jacks, two at the springline and two near the crown. These push forward to hold breastboards at the open face as needed.

The crown of the shell section is fitted with a heavy longitudinal steel girder. This rides on the second part of the shield—a two-legged vertical bent, or yoke, that supports the shell from the tunnel floor. At the base of each leg, a hydraulic jack with enlarged foot adjusts the yoke to proper grade. The top of the yoke carries a roller assembly within which the shell's crown girder rides. Because there is a tendency for this girder to carry the yoke forward with it as it moves, the top of the yoke is fastened back to a tunnel rib by comealong.

Sand is dug from the face by hand shovel or, where necessary, by air spade as the jacks shove the shell ahead. Careful manipulation of jacks and controlled excavation at the edges of the shield keep the unit on line.

After each 4-ft shove, the jacks are retracted so another set of Commercial Shearing two-piece rib and solid 2x8-in. lagging can be placed inside the trailing skinplate. Then the yoke is moved forward in preparation for another 4-ft advance. For this maneuver, the rear section of the shell's crown girder carries a long screw jack to take the load off the yoke, a small air-powered chain hoist to handle the jack, and two air rams to move the yoke.

The jack, pinned at its forward end to a slotted fitting on the girder, is swung down by the hoist from its horizontal carrying position to its vertical working position. Blocked to the tunnel floor and screwed out, the jack relieves the yoke.

Now the yoke's foot jacks are retracted, and the yoke hangs from the roller assembly on the crown girder. After its comealong holdback is freed, the yoke is pushed ahead to its next position by the two air rams. Reversing the procedure prepares the shield for the next shove.

Tunnel Mucking

The tunnel is mucked by an air-powered Eimco 630 that dumps into the hopper of a 30-in. Conveyco belt conveyor driven by air motor. Brackets pinned to the tunnel ribs near springline hold rails on which the 120-ft-long conveyor rides.

The conveyor dumps into a train of side-dump Madsen muck cars riding a narrow-gage track on the tunnel floor beneath it. Muck removed runs about 5 cu yd per ft of tunnel, and the conveyor is long enough to load all spoil from one advance into a six-car train without switching cars.

A 9-ton Goodman battery-powered locomotive pulls the loaded train from the heading while ribs and lagging are being set. Outside the portal, the train rides over an elevated trestle where a gantry-mounted air hoist tips the cars to empty them of muck.

Mining procedure is similar in each of the two headings. However, compressed air to one is supplied by Joy 750-cfm compressor, while a 1,100-ft Ingersoll-Rand unit supplies the other. Ventilating air at 3,500 cfm is supplied to each heading by Sutorbilt and Joy blowers.

L. E. Dixon Co., San Gabriel, is project sponsor for the Arundel-Dixon-Kemper combine. Project manager is J. B. Williams, and superintendents for the headings are Joe De Milita and Oris Holman. B. G. Oglesby is resident inspector on the job for the City of Los Angeles. David L. Narver, Jr., is project manager for the designers, Hyperion Engineers.

Modern Heavy-Duty Diesels

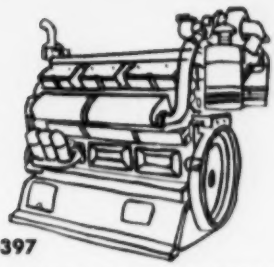
From a quarter century of diesel leadership, now comes the world's most advanced line of diesel engines

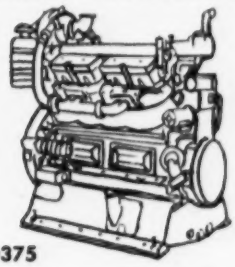
Designed and developed by Caterpillar research, these compact units pack more power in less space and deliver greater efficiency, greater economy and longer life in any application. And they're all ruggedly built for *hard work*.

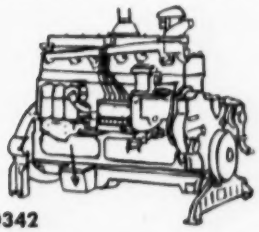
To meet your requirements, Caterpillar's modern power line is available in industrial engines, torque converter power units, spark-ignition engines, welders and electric sets up to 650 HP (maximum output capacity) and 350 KW. Also available is a complete line of marine engines up to 500 HP (continuous duty).

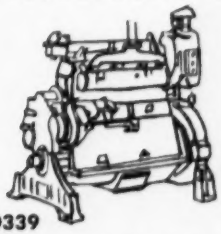
You have your choice of hundreds of variations. All units incorporate the latest advances in modern heavy-duty design. They're available as original or replacement power for excavators, cranes, ditchers, asphalt plants, crushers, compressors, welders, electric sets, pumps, drill rigs, sawmills and other equipment.

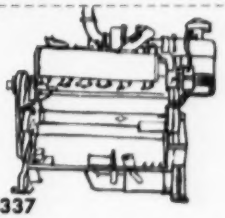
See the following pages for a summary of this rugged, modern power line. For complete information, see your Caterpillar Dealer!

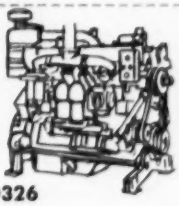

D397

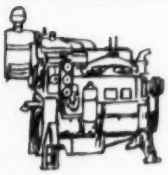

D375


D342


D339


D337

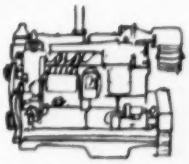

D326


D311

D315

D318

D315
(Series G)


D318
(Series G)

MODERN HEAVY-DUTY CATERPILLAR DIESELS

for Excavators, Cranes, Ditchers, Asphalt Plants, Crushers, Compressors, Welders, Electric Sets, Pumps, Drill Rigs, Sawmills and other equipment

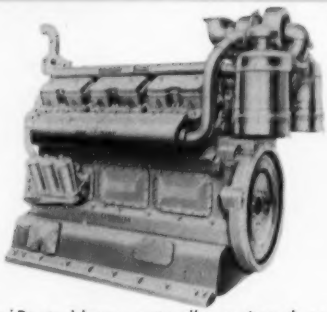
What modern heavy-duty diesels are

Compared with the heavy-duty diesels of the past, modern heavy-duty Caterpillar Diesels are compact and sturdy. They're the latest results of Caterpillar research to increase production and lower operating costs in your equipment. Manufactured by modern techniques from modern materials, they save space, fuel and maintenance time in any application. Bulk has been eliminated. Power and longer life have been added by superior design and metallurgy.

Why they do a better job than ever

Caterpillar's modern heavy-duty diesels feature the four-cycle design which provides a smooth, long, effective power stroke and a more efficient utilization of power. They require practically no attention. Their fuel system requires no adjustment. There are no cylinder ports to clean. And Caterpillar's single-orifice fuel injection valves combined with the precombustion chambers permit use of a wide range of fuels including premium diesel fuels as well as low-cost No. 2 furnace oil. All these and other features add up to new performance standards in diesel power!

For complete information about modern heavy-duty diesels, see your Caterpillar Dealer

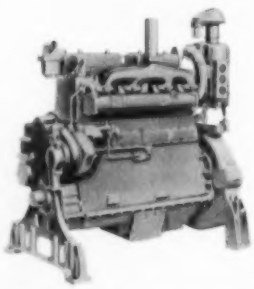


D397

with Turbocharger

650 HP*

Also available as a Roots blown, naturally aspirated or spark-ignition engine, and as electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

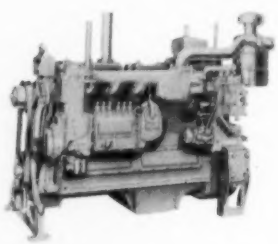


D339

Naturally Aspirated

140 HP*

Choice of air, electric or gasoline starting system.



D318

Naturally Aspirated

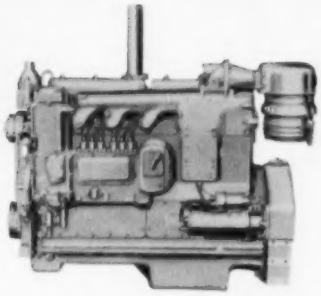
137 HP*

Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

NEW D318
(Series G)

Turbocharged

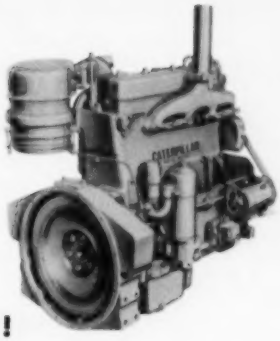
175 HP*



NEW D315
(Series G)

Turbocharged

115 HP*

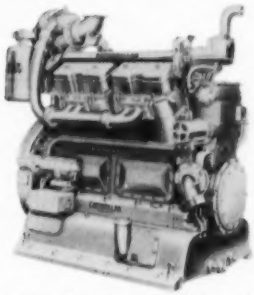


SMALLER, LIGHTER AND LOWER PRICED!

Keeping in line with Caterpillar's continued diesel leadership are these new Series G engines. They are designed for use in installations where space is at a premium. Both are small, light and low-priced; yet they deliver dependable power with the renowned Caterpillar durability. Also available naturally aspirated (shown above). Choice of air or electric starting system.

D375
with Turbocharger

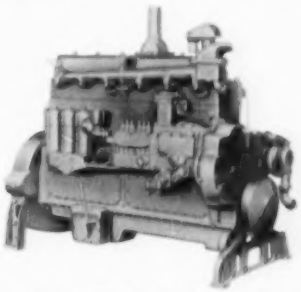
430 HP*



Also available as a Roots blown, naturally aspirated or spark-ignition engine, and as electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D342
Naturally Aspirated

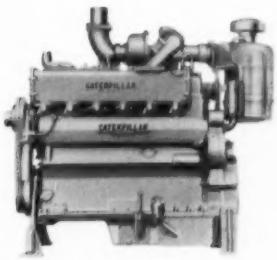
210 HP*



Also available as an electric set. Choice of air, electric or gasoline starting system.

D337
with Turbocharger

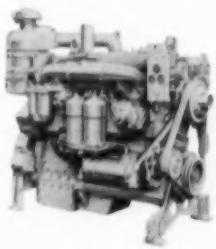
310 HP*



Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D326
Naturally Aspirated

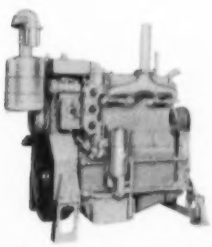
200 HP*



Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D315
Naturally Aspirated

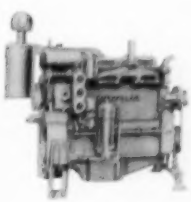
91 HP*



Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D311
Naturally Aspirated

65 HP*



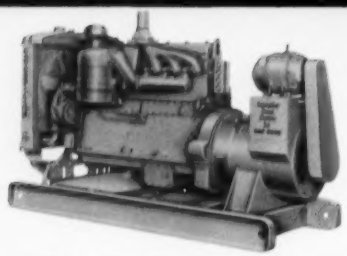
Also available as an electric set. Choice of air, electric or gasoline starting system.

*Maximum output capacity

Modern heavy-duty CAT* Diesels

ELECTRIC SETS

Dependable electric power, featuring the new Cat Generator, available in standard voltages, 60-cycle in the following KW sizes: 30, 40, 60, 100, 150, 165, 200, 225, 250, 315, 350. Also available as 50-cycle and D.C. units.



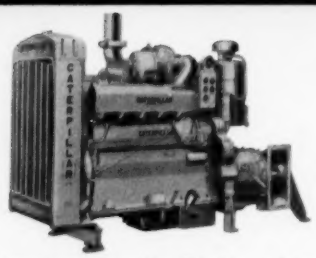
The new Caterpillar Generator brings you the best features of self-regulated and externally-regulated generators in one compact package. It means more for your money. While Caterpillar is prepared to supply you with almost any kind of generator you specify, your best buy is the Cat self-regulated Generator.

Advantages of the new Cat Generator

1. Designed to match exactly the Cat Engine powering it. **2.** Regulator with no moving parts provides steady, self-regulated voltage, no load to full load. **3.** No adjustments necessary after installation. **4.** Easily installed, no complicated switchgear or external voltage regulators are needed. **5.** Easily synchronized with other generators now in use. **6.** Big electrically, handles surge of heavy loads; rugged and easy to maintain; small and compact.

TORQUE CONVERTER POWER UNITS

Many different arrangements are available for each of six Cat Engines to provide you with a greater selection of power packages.



Wide choice of power units: Engine and torque converter; engine, clutch and torque converter; engine, clutch, torque converter and reverse gear.

Wide choice of output shafts: Standard heavy-duty drive for side loads; narrow chain housing for side loads; wide chain housing for side loads; output shaft for in-line loads only.

Advantages of Cat Torque Converter Power Units

1. Torque output is automatically matched to load. **2.** Loads start smoothly. **3.** Load movement can be controlled without using clutch. **4.** Overloads cannot stall engine. **5.** Need no special hydraulic oil — their fluid is engine fuel — fluid level automatically maintained. **6.** Cat Diesel Engine burns a wide variety of fuel oils cleanly and efficiently, even when idling.

Specify modern power—Caterpillar power!

On this page—and the three preceding pages—you've seen a summary of Caterpillar's modern heavy-duty engines. Either as original or replacement power, there's one among the hundreds of different arrangements that exactly meets your needs. Leading manufacturers of machinery can supply these models in the equipment they build. For complete details about them, see your Caterpillar Dealer. He backs you with prompt service. He has the experience and technical knowledge to help you with your power problems!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HUNDREDS OF DIFFERENT UNITS TO MEET YOUR POWER NEEDS

WANTED— THE HARD WORK

PRINTED IN U. S. A.

Strength, Color and Workability of Atlas Mortar are features that pleased Contractor L. A. Swyer of Albany, N. Y., on Dormitory Building job (above) at Rensselaer Polytechnical Inst., Troy, N. Y. Clean, modern design is work of Architect Henry L. Blatner, Albany.

For enduring beauty on your next project be sure to specify ATLAS* MORTAR Cement

- Durable, weather-resistant joints for all types of masonry begin with good workability in the mortar.
- With Atlas Mortar you get a smooth, workable mix and weatherproof joints that resist freezing-thawing weather.
- Atlas Mortar is quality-controlled during manufacture to insure uniform performance on the job. (Complies with ASTM and Federal Specifications.)

For further information, write Universal Atlas, 100 Park Avenue, New York 17, N. Y.

UNIVERSAL ATLAS CEMENTS

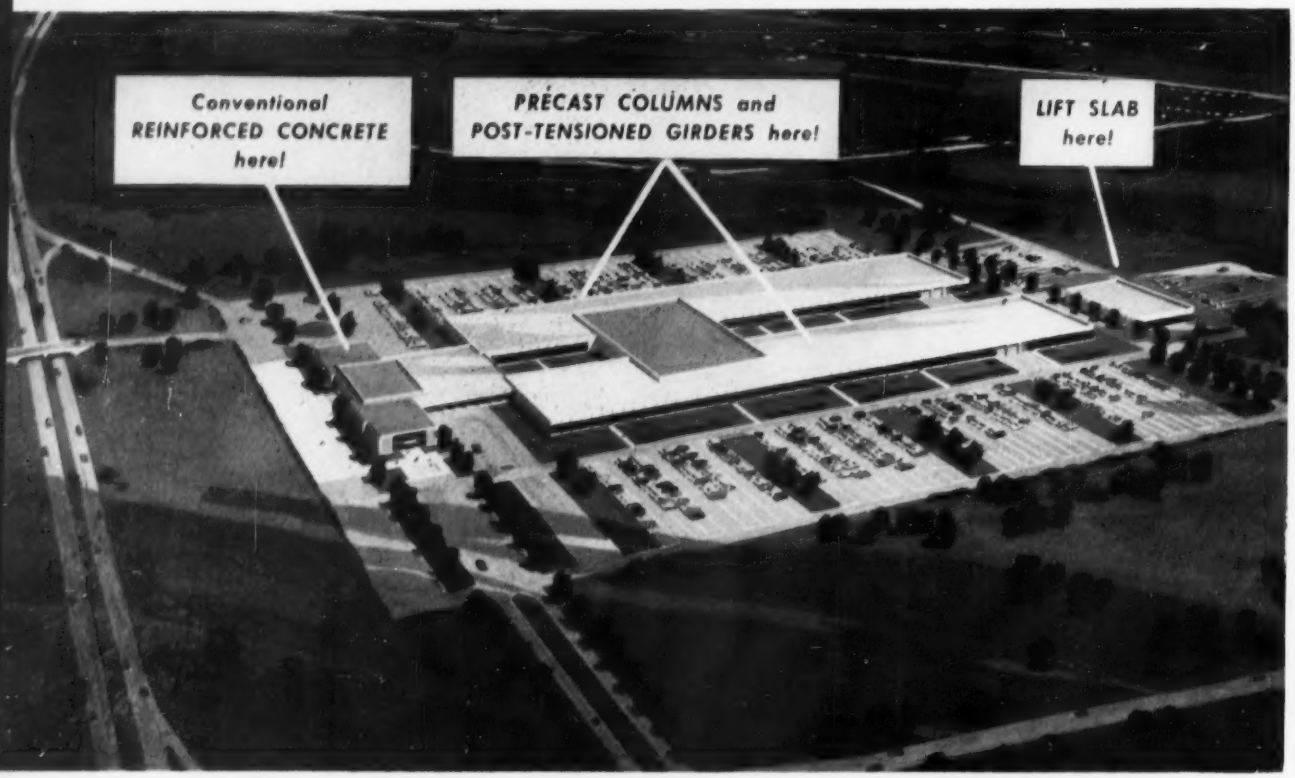
USS

*"ATLAS" MORTAR CEMENT is the registered trademark of the masonry cement manufactured by the Universal Atlas Cement Company

M-62

UNIVERSAL ATLAS CEMENT COMPANY—member of the industrial family that serves the nation—**UNITED STATES STEEL**

OFFICES: *Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco*



NEW PLANT for manufacturing typewriters in Lexington, Ky., sprawls over some 290 acres. Included in it can be found almost every kind of concrete construction in the book.

Concrete Meets All Challenges On Complex Building Project

WANT A QUICK refresher course in concrete construction? You can get one in a couple of days just wandering around a multi-million-dollar building job underway in Lexington, Ky.

The job is International Business Machine's new electric typewriter plant. It includes several manufacturing plants, a cafeteria, a two story office building, and an engineering research building spread over 290 acres of Kentucky hillside.

In the job you'll see conventional reinforced concrete construction; precast columns and post-tensioned beams and girders; poured walls and precast wall panels—almost the works. But the first question you probably will want to ask is, "Why all the variety?"

Reasons are almost as varied as the types of concrete construction. They stem from a combination of odd circumstances, most of which were built into the cost-plus contract awarded Gilbane Building Corp. of Providence, R.I.

Building Problems Arise

A year ago when IBM awarded the job to Gilbane it warned the contractor he first would have three important problems to solve: (1) Building enough plant so that IBM could begin turning out typewriters within six months; (2) Beginning the job immediately despite the fact no working drawings were yet available; (3) Finding a substitute for steel which would be impossible to get because of the steel strike that just had hit the nation.

Tough conditions? Certainly, but cost-plus contracts are cost-plus contracts, and, if the impossible was being asked—the impossible would be delivered. This is how Gilbane proposed to deliver.

The contractor decided to: (1) Throw up a small pilot plant that could be made available to IBM within six months; (2) Make up working drawings ahead of job progress; (3) Substitute structural concrete for steel.

First, Gilbane dispatched a work force to Lexington to clear the site. This included some 1,000,000 yd of excavation and the removal by blasting of a quantity of limestone.

Gilbane also set up a brain trust in New York (to be close to IBM's construction department) composed of architects, engineers, and consultants. The contractor engaged New York architects Fordyce & Hamby to handle design. Engineers hired were Stroble & Saltzman, structural; Guy B. Panero, mechanical; and Moran, Proctor, Mueser & Rutledge, con-

YALE

ZEPHYR

means faster handling of 1,000 lb. loads with less effort

Capacity: 1,000 lbs.
Frame width: 18"
Lift: 2"
Ground clearance: 1⅛"

The lightweight, rugged Yale Zephyr is a push or pull hand lift truck—specifically built to speed handling of lighter loads which cannot be moved efficiently by hand. Its compact design allows the Yale Zephyr to work in narrow aisles and crammed quarters with amazing speed and ease. A single-action treadle controls lifting and holds the load. Depressing the treadle will not lower the load until the operator pulls the handle into position for balancing the weight of the load—an extra safety feature. Steering is easy with a rubber-tired caster front wheel that rotates on roller bearings with a double race bearing swivel.

Used alone or as an integral part of your materials handling system, Yale Zephyrs speed short-distance hauling, save time wherever materials in quantity must be moved and cut operator effort in handling heavy and awkward loads. For complete information on the Yale Zephyr or other Hand Trucks in capacities from 1,000 to 12,000 lbs., write The Yale & Towne Manufacturing Co., Philadelphia 15, Pa., Dept. A-333.

YALE* **INDUSTRIAL LIFT TRUCKS AND HOISTS** *REG. U.S. PAT. OFF.

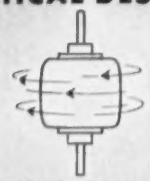
Gasoline, Electric & LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Hand and Electric Hoists

ANNOUNCING

the first major improvement in generator design in 25 years

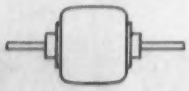
New Thor generator powering a Thor 7¼" SpeedSaw hastens construction of the new Congress Street Expressway in Chicago.

REVOLUTIONARY VERTICAL DESIGN



Spins like a top

Entire weight of generator armature supported by the tubular frame. Engine and main bearing turn the armature—do not support it. Generator spins best on vertical axis—lasts longer.



OLD DESIGN

Generator weight exerts loads on engine shaft and bearings. Causes more wear than in Thor's vertical mounting.

ALL NEW

THOR PORTABLE GENERATOR

Here's the brand new look in generator design—Thor's all-new 1500 watt portable engine-driven generator with vertical mounting.

This handy, compact power plant—available in AC and DC models—is the real answer to the builder or contractor who needs a rugged, portable power source. Check these features, then check your Thor distributor for a demonstration. • **Revolutionary design—vertical shaft engine** • **Light weight—95 lbs. Strong tubular framework protects unit, assures handling ease.** • **Heavy duty automatic rewind starter—easily removable for repair. Off-on toggle-type switch. No shock danger** • **Drip-proof construction—keeps fuel and moisture from entering generator** • **No-creep—stays put while running, yet slides easily when moved.** Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill.

Thor PORTABLE POWER TOOLS

ANOTHER FIRST FROM THOR

Universal Electric Motor-in-Head Concrete Vibrator

Model CV2-10 has 10-foot hose and switch • **Model CV2-20** has 20-foot hose and switch. • **Model CV2-210** has 10-foot hose on each end of switch. All models include 25-foot 3-conductor electric cable.

THOR POWER TOOL COMPANY
CHICAGO
Branches in all principal cities

Lift Slab Begins the Job ...

sultants. Freyssinet Co. of New York handled precast and prestressed design.

While excavation was under way in Lexington, the brain trust rushed plans for a 40,000-sq-ft pilot building. For purposes of speed, plans called for a lift-slab roof and precast wall panels.

Precast Beams and Girders

The trust decided to build the bulk of the other buildings largely of precast members. This was to include precast columns, precast and post-tensioned beams and girders, precast wall panels, and precast roof plank. The trust decided to stick with poured-in-place structural concrete for the two-story office building and the engineering research building. They would be needed last, and the designs lent themselves to poured-in-place construction.

During the course of construction, the trust meets together frequently both in New York and at the job to follow progress and make changes as necessary in methods, design, or materials. (One change midway through the job was to substitute gypsum for the originally intended concrete plank for the roofs of the manufacturing plants.)

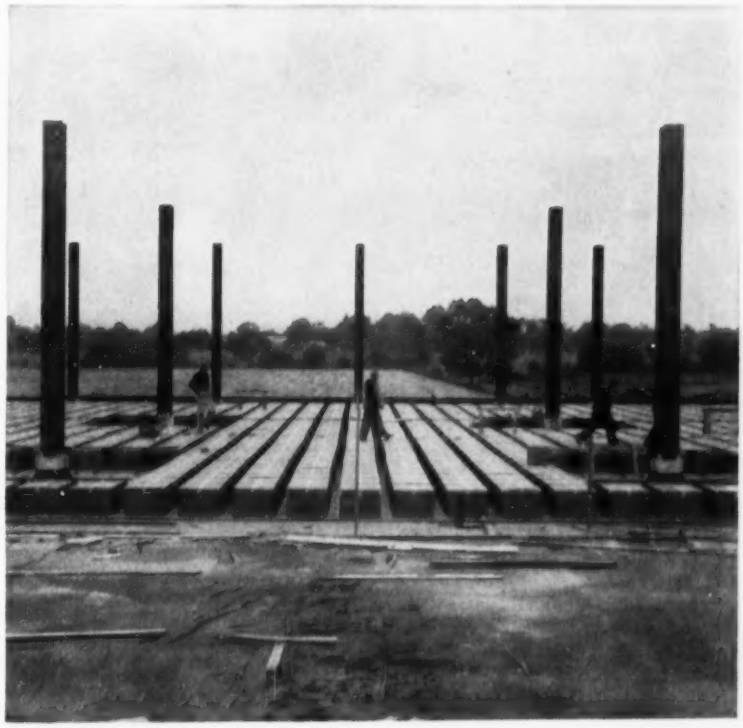
The Pilot Plant

Foundations for the pilot plant were made by boring 36-in. dia holes 6 to 30 ft to bedrock and filling the holes with concrete. These caissons were capped with concrete piers, each of which would support a 21 WF steel column. (Gilbane used second-hand steel for this phase.)

Over-all dimensions of the pilot plant are 215x262 ft. After foundations were in and columns placed, the contractor poured a 40,000 sq ft concrete floor slab 6-in. thick and reinforced with wire mesh.

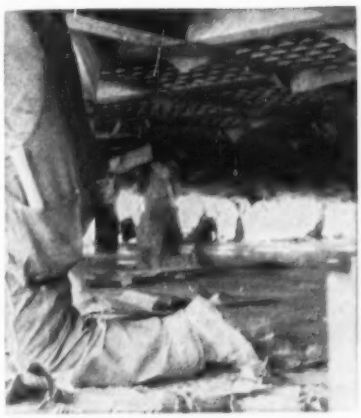
First step in preparing for the lift slab was to place sheets of ⅝-in. plywood to cover the entire floor and ease separation of the roof slab when the lift began. This was an innovation on the contractor's part. Normally, the form slab (floor slab) is mopped over with a resin compound to facilitate parting. But this means the slab must be peeled off the form slab column by column to prevent cracking should any portion tend to stick.

continued on next page



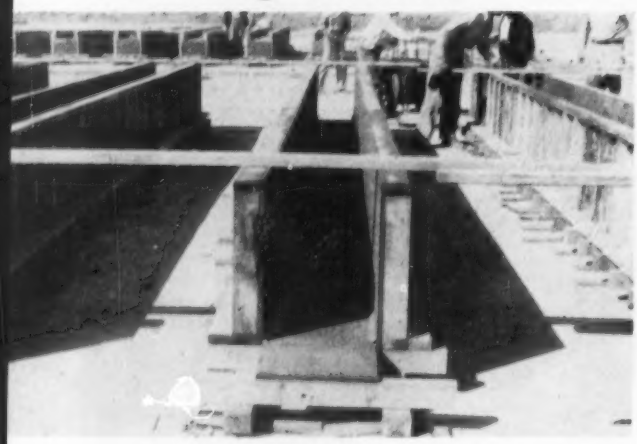
FIBERBOARD BOXES placed over sheets of plywood are set over floor slab to form waffle-type underside for slab that will be lifted. Boxes measure 2x2 ft by 19 in. deep.

SLAB REACHES halfway mark on its climb to the top. Total raising took about 15 hr.

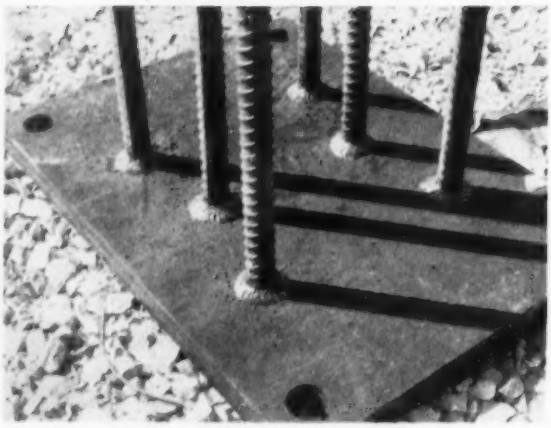


WORKMEN BEGIN stripping fiberboard boxes from underside of slab during lifting.

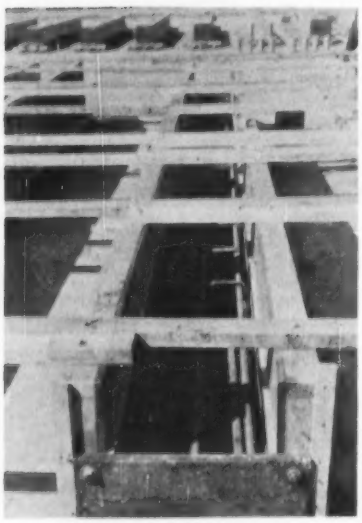
Precasting Columns



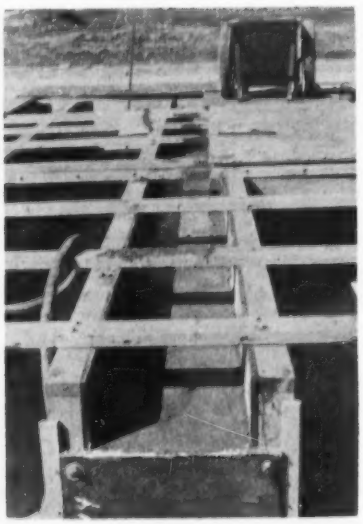
CASTING BED is simple in design and easy to erect and strip. Forms used are plywood.



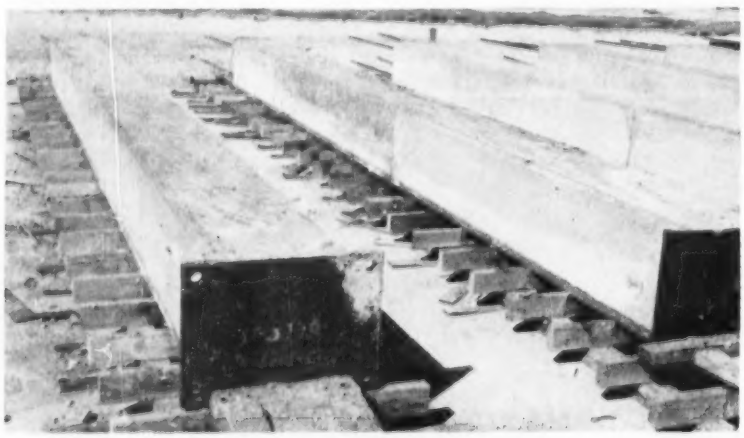
STEEL BASE PLATE fitted with welded-on steel dowels was fabricated in contractor's shop.



REINFORCING STEEL is made into a basket on the job and lowered into column.



CONCRETE is poured into column and vibrated. Columns then cure seven days.



COLUMNS await removal to job site after forms have been stripped and removed to a new bed.

The underside of the roof slab was of waffle-design. To form for it, Gilbane used fiberboard boxes 19 in. high and 2x2-ft square, placed so that the sides formed joists 8x19-in. and 17-ft long from column to column. Reinforcing steel next was placed in joists and around columns. Temperature rods were placed over boxes. Cast-steel lift collars then were slipped over columns and set to rest on the form to be embedded in concrete. Finally, a 4-in. slab of lightweight 3,500-lb concrete was poured. The slab was permitted to cure for 28 days. During curing, jacking equipment which would be used to lift the slab was installed by Texas Lift Slab Co., the firm that would do the actual lifting.

A 150-ton hydraulic jack was set over each column head. Two jacking rods extended down from the jack and screwed into the cast steel collars embedded in the slab. A hydraulic feed line ran down from each jack to a central control panel with 12 separate gages, each controlling one jack.

Jacking Begins

A central line ran from the panel to a hydraulic pumping unit that fed the fluid. Because of the plywood between form slab and lift slab, the lift was made with all jacks working simultaneously. The lift took 15 hr. When completed, steel collars were welded to columns, and jack loads were released. Columns then were fireproofed.

Precast panels—concrete faced with a broom finish—were supplied by Marietta Concrete Corp. These

continued on page 84

Here's the Inside Story of Why You Get Lasting Accuracy, Eliminate Costly Repairs with . . .

Brunson's Patented

DUSTPROOF BALL BEARING CONSTRUCTION!

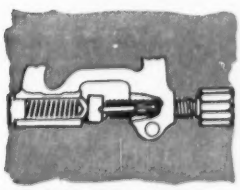
Engineer's Transit Model 50

Think surveying instruments are all pretty much alike? The "inside story" shows you why Brunson instruments are different—why they assure lasting accuracy and minimum maintenance unrivalled by any other instruments. The big difference is dustproof ball bearing construction!

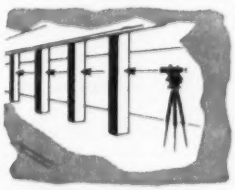
Located in the spindle and telescope axis, Brunson ball bearings are permanently lubricated by an all-temperature grease and sealed against dust and moisture. Preloaded and accurate to 5-millionths of an inch, these ball bearings provide highest possible instrument accuracy. With dust sealed out and lubricant sealed in, wear is practically eliminated by the smooth ball bearing action. That's why your Brunson instrument stays accurate and operable year-in-and-year-out, where others fail. You save hundreds of hours in on-work time, avoid costly errors, slash routine repair and maintenance expense to a level undreamed of in the past.

You pay no more for Brunson's exclusive ball bearing construction. Mail coupon today for the complete "inside story".

You Get These Big Advantages, Too!

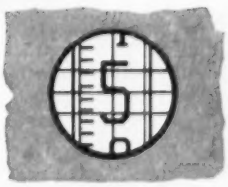


Wobble Pin in Tangent Screw Point—Enables your Brunson instrument to stay "on point" by eliminating strain and wear points that cause slippage.



Long and Short Shots in Collimation—Long and short shots are all in exactly the same straight line. No attachments needed for sharp focus at even 42 inches.

Sturdy, Heat Treated Cast Truss Standard—Supports over 200 pounds without bending or warping. Strong construction, throughout, withstands even the roughest handling.



Exceptionally Accurate Stadia Readings—Provided by coated lens with extra-sharp focus and strong, "no sag," Fiberglas cross wires. Wide field of view.

BRUNSON

The New Standard of Excellence

Distributed Exclusively By

BRUNING

Offices in 37 Cities of the U.S. and Canada

(In Canada: write 105 Church St., Toronto 1, Ont.)

Charles Bruning Company, Inc., Dept. 34-Q
4700 Montrose Ave., Chicago 41, Ill.

Please send me information on Brunson Surveying instruments.

Name _____ Title _____

Company _____

Address _____

City _____ County _____ State _____

DOES THE KING OF THE CRAWLERS PAY ITS WAY?

Let's talk push-loading. We'll use some figures—that's the only way to tell a dollars-and-cents story.

On a job in Munsing, Michigan, not long ago, a Caterpillar D9 Tractor and a competitive machine were both push-loading in moist sand with some gravel in it. The other machine loaded 18.3 cu. yd. in .91 min. That's 20.1 cu. yd. a minute. The D9 pushed 18.5 cu. yd. into the scraper in only .58 min. That's 31.9 cu. yd. a minute. In other words, the D9 loaded over 50% faster than the other machine, and developed a larger load while doing it.

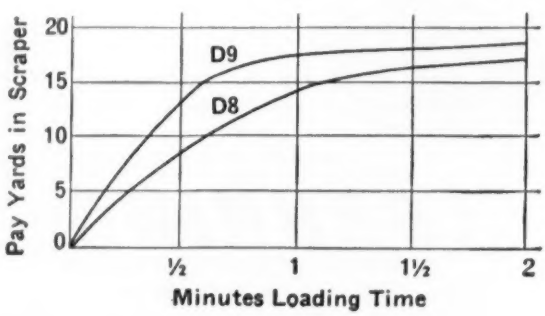
In Belmont, N. C., a D9 and a different competitor were push-loading in sandy clay. The other machine handled 15.3 cu. yd. in .67 min. Or 652 cu. yd. an hour. The D9 handled 17.2 cu. yd. in .42 min. Or 860 cu. yd. an hour. This was a half million cubic yard job; the D9 could have completed it in 3½ weeks less time than the other machine.

On a job in Minot, N. D., on another in Atlanta, Ga., the story was much the same.

Compare a big yellow machine with another big yellow machine

Maybe the best way to spell out how the D9 can boost profits is to compare its performance not with another make but with this famous CAT* D8 Tractor.

Owners and operators know what the D8 will do. Pound for pound, it's the best-producing crawler in its class today. The D9 is bigger, has more power. Does this added size and power really make a difference? Look what happens when you have a D8 and D9 both pushing DW21-No. 21 units on the same job:



D9 push-loads DW21 with No. 470 Scraper on highway job in Wisconsin. Ten-mile job calls for handling 120,960 yards, mostly sandy gravel. D9 loads DW21 in gravel in 70 seconds here, with heaping loads up to 25 yards. Vice President F. L. Carr of L. G. Arnold, Inc., says, "The D9 pusher has more than lived up to our expectations." Grade Superintendent Phil Dudenhoefer adds, "Outproduces by far any other machines on the job."

Forget size, weight, horsepower. Forget toughness and agility. These only point to what counts most: out on the job, how does the D9 really stack up against competition in cost-per-yard?

Or compare these two big yellow machines this way. Say on a job your haul distance averages 1,875 feet and you're using three DW21-No. 21s with one pusher. If that pusher is a D8, you stand to average 344 yards an hour. If it's a D9, you'll get 412.

Now, say your spread is made up of the pusher and the three wheel units, plus a No. 12 Motor Grader and another crawler with 'dozer and roller. Figure your hourly owning and operating cost. Count in the depreciation, taxes, gas and fuel, lube oil, grease, repairs and labor, and operators' wages. If your pusher is a D8, a reasonable figure for the spread would be $73.52 an hour. If it's a D9, your costs could come to $77.32. But remember, you're getting 344 yards with the D8, and that comes to 21.4¢ an hour per yard of dirt. With the D9, you're getting 412 yards at $77.32 an hour—which figures out at 18.7¢ per yard of dirt.

The D9 would save you 2.7¢ per yard, *and* give you 68 more yards, each and every hour.

Naturally, these figures might not exactly match your own. But they are figures based on actual performance records and they tell an honest story.

Would the D9 make more money for you?

There are jobs that would not warrant a D9. With the rugged D8 available, there may be no need to call in the 29-ton, 320-flywheel-HP D9. But the above figures certainly prove this much: on job after job, the D9 *is* paying its way, no matter how close the records are kept. One of these jobs could be yours.

But don't just take our figures for it. Call your Caterpillar Dealer. Have him demonstrate the D9 on your job. Check it with *your* watch, in *your* dirt, against *your* books. *That'll* tell the tale.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE D9— PROFIT BUILDER

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

USERS SAY R/M BELTS AND HOSE GIVE YOU

RAY-MAN CONVEYOR BELT...

Outlasts Them All on Tough Hauls!

R/M engineering makes the difference with this heavy duty conveyor belt. Ray-Man Conveyor Belt features a new construction of covers and strength members to resist cuts, tears and abrasion to a degree never before possible. R/M's exclusive "XDC" Cover adds an extra measure of protection and long life not available with any other belt. And beneath the cover, cushioned strength member plies, in an envelope of strong, flexible synthetic fabric, resist the impact of heavy, shock loading and ripping. The belt troughs easily and trains naturally.

Ray-Man Conveyor Belt holds fasteners better than ordinary belts . . . requires no breaker strip. Like all R/M heavy duty belts, it's moisture resistant and mildew-proof. You get longer, trouble-free service . . . "More Use per Dollar" with Ray-Man as well as other R/M conveyor belt constructions, including extra-cushioned Homo cord for unusually abusive shock loading, and R/M Tension-Master for extra long lifts, high tensions.

Write for Bulletins #6915 and #6906

● TRAINS NATURALLY

● RESISTS IMPACT

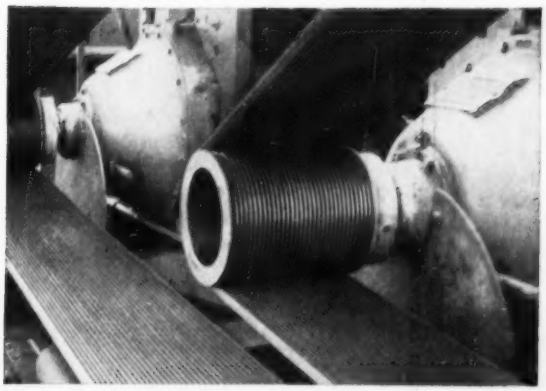
● DOUBLE COMPENSATION RELIEVES OUTER PLY STRESSES

"More Use per Dollar"

HOMOFLEX HOSE is Easier Handling... Longer Lasting!

The unique construction of Homoflex Hose makes it light, yet strong . . . and flexible as a rope. Made with no pre-set twist, it coils and uncoils in *any* direction *without* kinking. A homogeneous cover, strength member and tube that are virtually inseparable assure easier, safer handling on the toughest jobs. It's easier to couple, too, because it has uniform inside and outside diameters. Homoflex Hose gets more work done, lasts longer . . . gives you "More Use per Dollar" . . . wherever air, water, and other fluids and gases are handled.

Write for Bulletin #6879



R/M POLY-V® DRIVE

Delivers More Power in Less Space!

Single unit belt design of R/M's patented Poly-V* Drive permits *narrower* sheaves to deliver up to 50% *more* power in the *same* space as ordinary V-belt drives . . . *equal* power in as little as ⅔ the space! Poly-V eliminates multiple belt matching problems, too . . . and just *two* belt cross sections meet *every* heavy-duty power requirement.

Write for Bulletin #6638

For the "Smoothest Running V-BELTS Made," Specify CONDOR and R/M SUPER-POWER V-BELTS

**Poly-V is a registered Raybestos-Manhattan trademark.*

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

CRANE LOWERS precast column vertically into place on concrete pier. During the pour the pier was fitted with dowels to hold column.

were fitted into place on the outside wall. Machinery moved in at the same time as fixtures, and the plant that was started in August of last year was finished by Christmas.

Precasting and Post-Tensioning

Completion of the pilot plant brought the job into the winter months. This phase of the job included casting of columns, beams, and girders and post-tensioning of beams and girders. Winter protection was to be a big factor. Curing precast members is a tricky business and has to be carefully controlled. Gilbane solved this problem by building a city of tents over the job to house casting beds.

Tents are tarpaulins draped over timber frames. To heat them, Gilbane uses oil-burner heated drums fitted with fans that blow air into the tents. Air temperature is kept at an even 70 deg.

Precast Columns

In some of these tents, Gilbane casts columns 23 ft long by 16-in. square. They are reinforced with four No. 8 rods 23 ft long.

A 1-in.-thick steel base plate fitted with four holes is placed at the bottom of each column. Columns are set on piers. Pier dowels slip through the holes in the base plate. Two rods, cast into the column tops, will anchor beams and girders.

Casting beds are built by running two continuous 3x4's on the ground 20 in. apart for each column. Placed transversely over these are 2-ft lengths of 2x4's on 1-ft centers. A 16-in. sheet of plywood is laid down over the 2x4's the length of the column. Sides then are erected of ⅝-in. plywood braced by 2x4-in. studs.

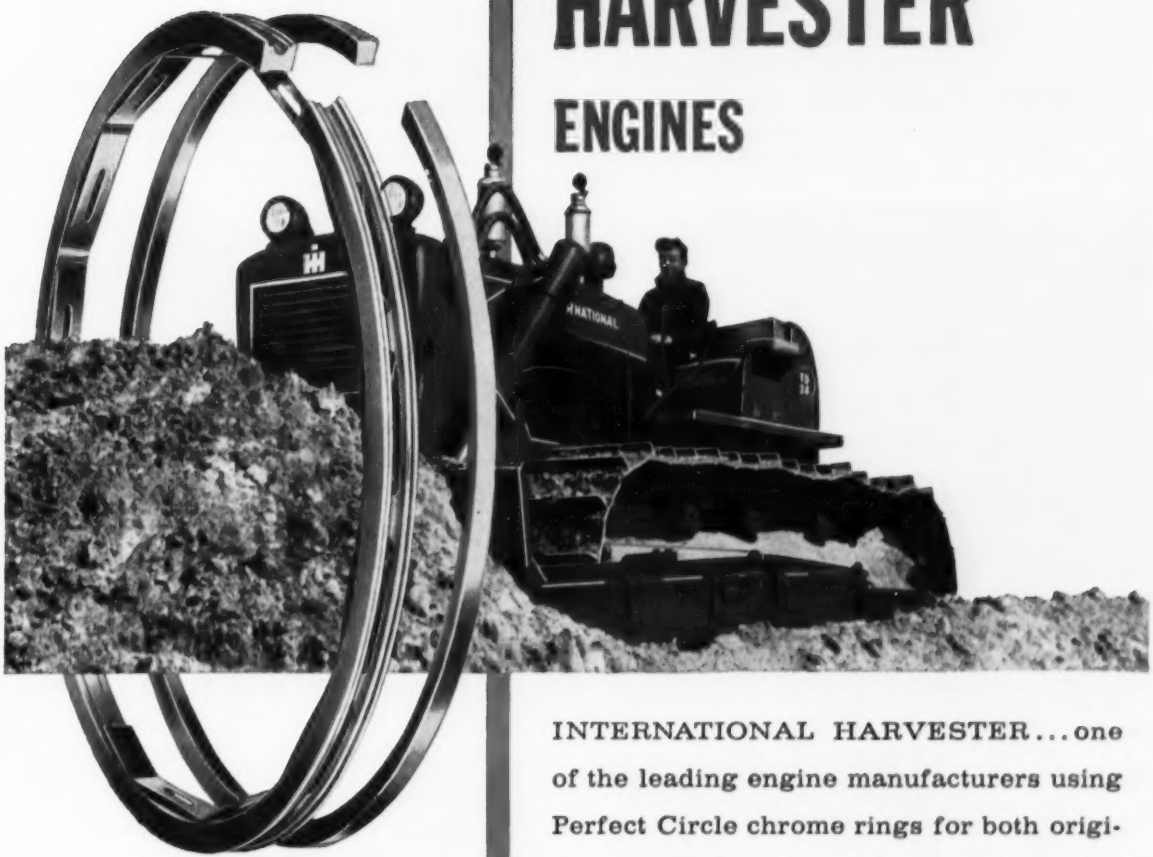
Twelve sets of forms are set up per bed and connected by two continuous lengths of 2x4's to hold them upright. Rods, dowels, and steel plates are set, and, finally, 3,000-psi concrete is poured and vibrated. Columns are left to cure for seven days before forms are stripped.

continued on page 86

For

Best Performance in

INTERNATIONAL HARVESTER ENGINES



INTERNATIONAL HARVESTER... one of the leading engine manufacturers using Perfect Circle chrome rings for both original equipment and replacement service requirements

PERFECT CIRCLE

PISTON RINGS... *the standard of comparison*

CONCRETE CHALLENGES . . . continued from page 84

Post-Tensioning Beams and Girders

MALE CONE placed between high tensile wires serves to lock wires equal distance apart.

PICK HANDLE is used to hammer male holding cone into beam end prior to post-tensioning.

HYDRAULIC JACK fitted against male cone with strands attached begins tensioning wires.

WORKMAN FEEDS hydraulic fluid from pump set near jack. Several jacks can be operated from unit.

GROUT is fed under pressure into flexible hose set in girder. Wires next are trimmed.

GIRDERS are stacked away from job to await placing by crane on top of pre-cast columns.

Concrete Pouring

Post-Tensioned Beams and Girders

Beams and girders (ranging up to 60 ft in length) are cast in much the same way as columns except that Gilbane uses steel forms placed within the wood form sides to get the designed shape of the beam.

After reinforcing, workmen place flexible steel hose containing 12 strands of .076-in. dia high tensile steel wire later prestressed at 250,000 psi. A female concrete cone goes into each beam end to hold wire strands properly spaced. Workmen then pour and carefully vibrate 5,500-lb concrete made with hi-early cement and containing Plastiment additive for faster curing. Concrete cures in seven days under a 70-deg temperature. Post-tensioning (Freyssinet method) then begins.

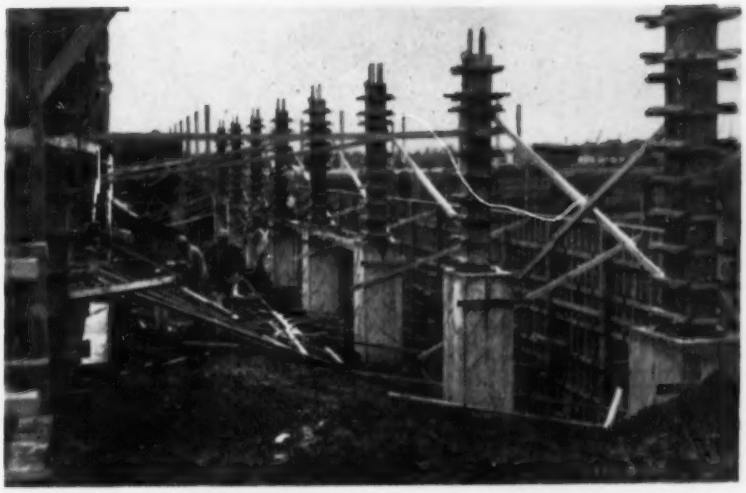
Strands protruding from each beam or girder end are spread apart so workmen can insert a male concrete cone through the center of the wire spread to lock them in place equidistant from one another.

Tensioning Begins

A hydraulic jack supported by an A-frame is placed against the cone, gripping each of the 12 strands. Wires are elongated 3⅜ in. with a 6,500-lb pull. This draws the male cone deep within the female and prevents wires from slipping. The jack then is released, and the flexible hose is pressure grouted. Workmen burn off wire ends and grout the beam ends. Girders then are stacked for further curing. Later they are lifted and positioned on top of the cast columns.

Beams and girders designated for the building's perimeter are fitted with inserts on which precast apron wall panels can be hung. Roof construction (changed from precast plank midway in the job) is gypsum poured on metal lath.

Conventional reinforced concrete construction goes into cafeteria, office, and research building construction. These buildings are of rigid frame, flat-plate design. Forms are erected in place, and pours are made monolithically to include columns, beams, and slabs.



STEEL and forms for cafeteria section of plant next are placed. Cafeteria, office building, and research building were only structures in job not largely precast.

FREAKISH Kentucky winter forced building air-heated tarpaulin shelters over casting beds. Shelter flaps were moved aside during pour then restored after pour was finished.

Your Wickwire Rope Distributor and our sales engineer ... a helpful team

This sales engineer—an expert on the selection, installation and maintenance of our products—is with your Wickwire Rope Distributor every time he makes a call.

True, sometimes he's hundreds of miles away, working in the field or at the mill. Yet, even if he's not there in person, your Wickwire Distributor has the full assurance that sales engineers such as this one are *always* quickly available to help you.

It's just one more reason why your Wickwire Distributor knows he's got top-quality wire rope, slings and strand to sell ... and that these products will serve you well.

4086

A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

ANOTHER NEW "Euc" SCRAPER

MODEL SS-18

...25 yards heaped

300 HORSEPOWER • TORQMATIC DRIVE

...high speed production over the long hauls

Consider this new Euclid for your earthmoving requirements. Designed for increased production on the long haul scraper jobs, the SS-18 combines power, speed and 18-yard struck capacity.

Six-wheel design provides good weight distribution and the stability needed for high speed, long hauls. A 300 h.p. diesel supplies the power through Torqmatic Drive. There's no clutch — change from any one of the three speed ranges to another is made under full power. Both drive and scraper tires are 24.00 x 25, with 29.5 x 25 optional for jobs requiring maximum traction and flotation.

For more details on this big high production scraper, contact your Euclid dealer... ask him to show you why *Euclids are your best investment.*

EUCLID DIVISION, GENERAL MOTORS CORP., Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

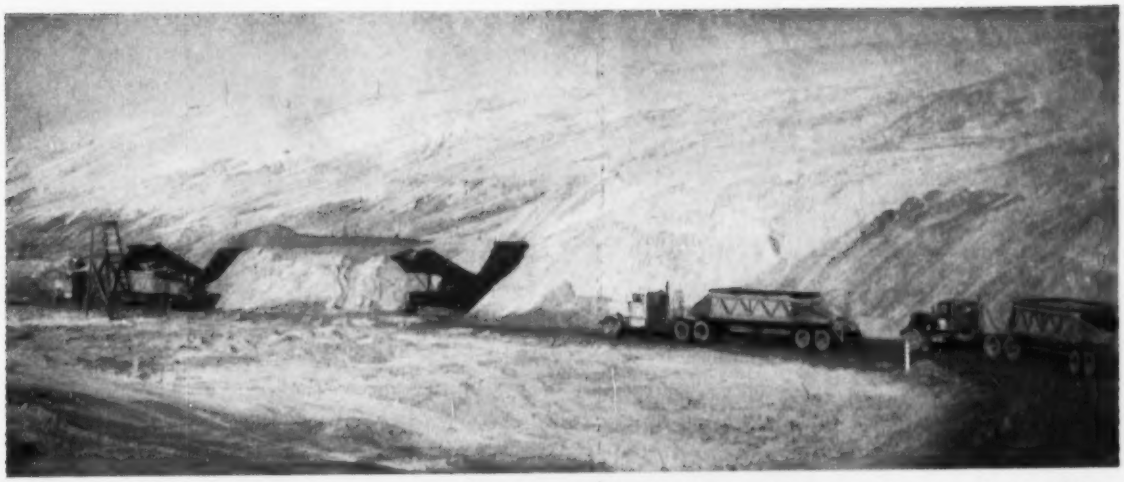
Loading . . . SAND POURS INTO HAULING UNIT from machine devised by contractor to help excavate some 3,000,000 cu yd of dune sand for power plant site. Rig fills 22-yd truck in 33 sec.

. . . and Unloading SAND FLIES ONTO BEACH from another contractor-built machine that empties truck in 33 to 45 sec and distributes the material over wide area. Two 100-kw units power it.

Contractor-Built Rigs Handle Sand Fast

WHEN YOU'RE LOW BIDDER at $1,670,000 and the other bidders are bunched with a second low of $3,330,000, chances are you're either foolish, unlucky, or inaccurate —or you've got a trick up your sleeve.

It was a case of this last alternative when Contractor R. R. Hensler of Sun Valley, Calif., bid the $1,670,000 for work at the new



BARREN DUNES from which sand is dug (above) and beach on which it is deposited are impassable to wheeled vehicles except on clay-stabilized haul roads. It was to keep these haul roads to a minimum that contractor developed his loader and unloader.

Scattergood steam plant of the Los Angeles Dept. of Water & Power. The job seemed simple enough—excavate 3,000,000 yd of dune sand in the process of grading the 58-acre oceanside site and deliver the spoil 2½ mi away to improve a public beach.

But ordinary methods of handling the work weren't simple enough for Hensler. He wanted to load the haul trucks at faster than normal speed and unload them apace without their getting bogged down in the soft sand. So he put together a couple of ingenious mechanical units that heap a 22-yd truck in 33 to 38 sec and another that empties it in 33 to 45 sec. The latter machine flings sand an average of 70 ft from the truck to help distribute it on the beach.

Hensler developed his loading machines for terracing the plant site into seven different levels averaging 18 ft in height and ranging from El 34 to El 160. Terracing minimizes the earth-moving problem and also will provide gravity feed of fuel oil from storage tanks to the generating plant.

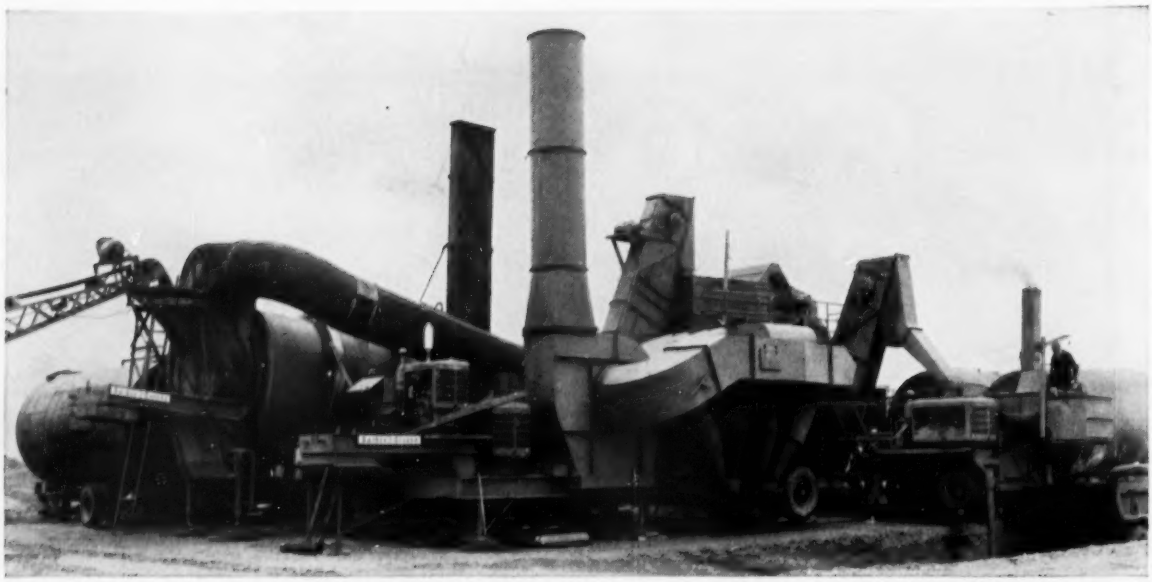
Three bulldozers—a Caterpillar D8, a D9, and an International TD-24—excavate the loose dune sand for the terraces by pushing material to one of two loading machines placed at the bottom of a sand bank. Each machine consists of a bulkhead-hopper of 3/16-in. steel plate which feeds a belt conveyor that discharges directly into haul trucks.

The loader's face bulkhead—10 ft wide, 16 ft high, and canted 1 on 4 from the vertical—is support-

continued on page 94

LOADING MACHINE incorporates belt conveyor and drive from Euclid loader. Material bulldozed to unit falls to belt through gate in bulkhead. Grizzly scalps out rocks.

BULLDOZERS feed loading machine, first working down slope toward unit. Then, as grade drops, they work up, creating mound behind loader. Maximum output: 19,000 yd in 16 hr.



How to lower the cost of asphalt paving

with Barber-Greene Continuous Plants . . . available in capacities from 20 to more than 200 tons per hour. Built for maximum portability, these plants produce all types of mixes at highest capacity, and for lowest operating cost. Once the proportions are set, operation is automatic; the human element is eliminated and manpower requirements are reduced to a minimum.

with Barber-Greene BatchOmatics . . . available in 2000, 4000 and 6000 pound sizes. Operating on inherently automatic principles, these plants save seconds at every point in the cycle. Instant changeover from automatic operation to manual production of mixes for the drive-in trade . . . instantly reset to preset repetitive cycle operation. New Dyna-Mix pugmill gives faster coating.

with the Barber-Greene Finisher. Having the widest choice of operating speeds, the Barber-Greene Finisher can lay every job at the maximum speed. It provides positive traction, superior maneuverability and unmatched ease of operation. Wide receiving-hopper simplifies truck discharge, eliminates spillage. No other machine paves as permanently, as speedily and as economically.

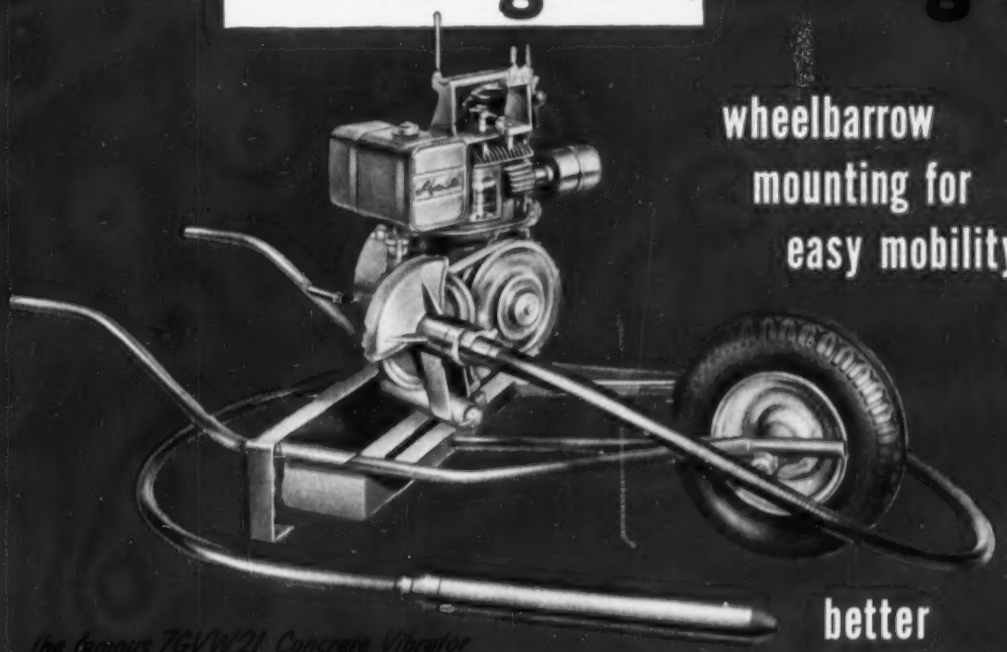
Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

now, in concrete vibrators, too,

if it's Remington, it's right!



wheelbarrow mounting for easy mobility!

better concrete at lower cost!

The famous 7GVW21 Concrete Vibrator has 4 great features that make it right for you!

- Dependably powered by rugged single-cylinder, 4-cycle air-cooled gasoline engine with centrifugal drive and automatic clutch.
- This versatile unit can also be used to power attachments for concrete surfacing, sanding, wire brushing, pumping and other jobs.
- Long-reaching flexible shaft made up of 7 ft. or 14 ft. sections. Extra sections can be added as needed.
- Unit can be moved right along with the work on pneumatic-tired wheelbarrow mounting. This unit is also available on 360° swivel round base mounting.

MODEL 7GVW21 *5 HP concrete vibrator. Available with 2¼" x 20" 7,000 RPM vibrating head or 2½" x 12" 10,000 RPM vibrating head.*

You'll use less cement, coarser aggregate and produce denser, more uniform concrete...and do it in fewer man-hours!

That's a mighty big order to be sure! But it's being done every day on every kind of concrete job by these indispensable vibrators by Remington—the newest name in power tools and famous for 141 years for quality in sporting firearms and ammunition.

You name it...Mall Tool Company, Division of Remington Arms Company, Inc., gives you a vibrator for every application from small form work to large mass concrete compaction. Over a dozen models, most available in gasoline engine, electric or pneumatic, including the new 1-man 115-volt vibrator with motor-in-head. Let us send you our latest catalog today!

Remington

MALL TOOL COMPANY
Division of Remington Arms Company, Inc.
25000 S. Western Avenue • Park Forest, Illinois

Mall®

Electric circular saws are best buys for every purpose

Electric impact wrenches speed up work on heavy equipment

Specifications subject to change without notice.

MALL TOOL COMPANY
Division of Remington Arms Company, Inc., Dept. C32
25000 S. Western Avenue • Park Forest, Illinois

Please send free catalog on Construction Tools.

NAME _____

STREET _____

CITY _____ ZONE ____ STATE _____

UNLOADING MACHINE receives bottom-dumped load of sand in four hoppers, each feeding a 24-in. belt conveyor. Conveyors feed four sand pilers that sling material out onto beach where it is further spread by dozers. Unit is skidded ahead as needed.

SAND SLINGERS are Stephens-Adamson units (shown here with chain guards removed) that throw sand 40 to 90 ft away. They carry vibrators, as do unit's receiving hoppers.

ed by braced wing-walls at right angles to it. A hydraulically operated gate near the center of the bulkhead funnels sand into a 54-in. belt conveyor 32 ft long extending up and out from between the wing-walls.

Conveyor and drive were taken from a standard Euclid loader. However, Hensler added a steel-bar grizzly to the discharge end to screen out rocks and other material that would foul unloader equipment and be undesirable on the beach.

Loaders are skid mounted for towing by crawler tractor and are re-positioned once a day. While Hensler built two of the machines, one was originally kept on standby so there would be no interruption in production while the other unit was moved, serviced, or repaired. Now, however, both loaders are used together to speed the job.

Hensler subcontracted hauling to Asbury Transportation Co., Los Angeles, who brought in a fleet of 22-yd Cook Bros. BDS-2 semi-trailer bottom-dumps. These are drawn by Kenworth or GMC truck-tractors, all powered by 175-hp Cummins diesel engines. From 12 to 19 trucks are needed, depending on haul distance.

continued on page 98

POWER Aplenty

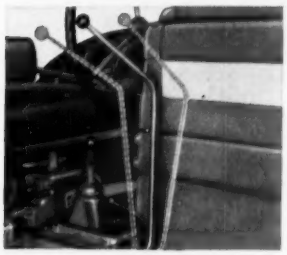
for MANY JOBS...at NEW LOW COSTS

JOHN DEERE
Crawler Tractor

Compact, powerful, and low in first cost, the "420" Crawler is built to deliver years of dependable service at very low cost per hour. Ruggedly built. Easy to start. About 30 engine horsepower. Fewer parts to wear, easily serviced, very low fuel consumption. Your choice of 4- or 5-roller frame . . . track shoes to fit your needs. Optional equipment includes smooth, fast-working single or double hydraulic system, direction reverser, new 3-point hitch for rear-mounted equipment, and 5-speed transmission. Wide choice of matched working equipment for nearly all jobs, including trencher, shown in action, at left.

JOHN DEERE
Utility Tractor

This wheel-type, stay-on-the-job power unit can boost your profit margin on many kinds of work. Low in first cost, low in upkeep, remarkably low in fuel costs. Cuts "down time" to a minimum because of simple, rugged construction. Highly maneuverable. Has unusual stability when carrying loader, backhoe, or similar equipment. Built low—easy to get on and off, sure-footed on slopes. Optional equipment includes direction reverser, 5-speed transmission, and power-adjusted rear wheels. Shown with loader and backhoe. 3-point hitch regular.



DIRECTION REVERSER
. . . a Real Time-Saver

Optional for Crawler and Utility tractors. Lets you move forward or backward in same speed without shifting gears. Investigate—you can save as much as an hour a day in travel time on loading, dozing, and many other jobs!

. . . Now Ready for You!

Some of the Equipment Available

Loaders	Scrapers	Sweeper	Seeders
Scarifiers	Trenchers	Crane	Scoop
Backhoes	Generator	Snow Plows	Fork Lift
Dozers	Pump	Sprayers	Power Saw
Cutter-Bar Mower		Cement Mixer	Gang Mower

JOHN DEERE
Industrial
Tractors and Equipment

Backed by nearly 40 years of tractor manufacture for dependable service and quality.

SEND FOR FREE LITERATURE

John Deere Industrial Division, Moline, Ill., Dept. D19G

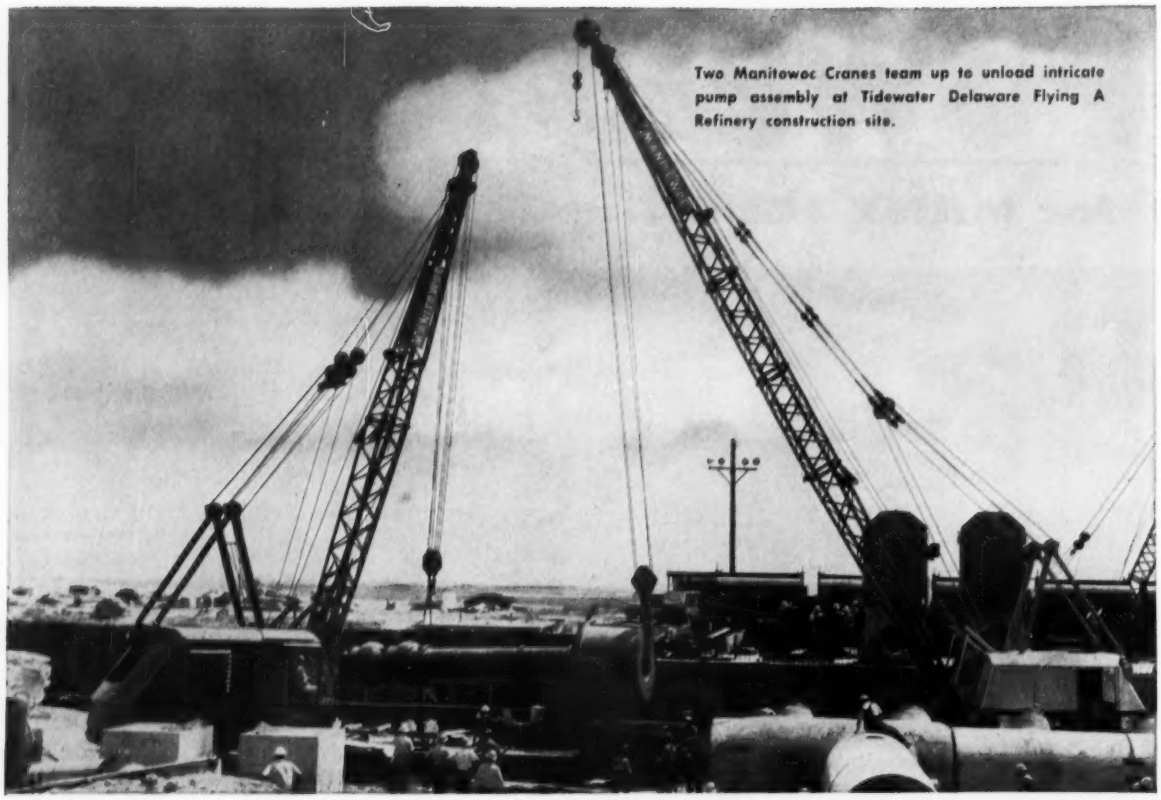
Please send me your illustrated booklet on John Deere Industrial Tractors and Working Equipment. Include name of nearest dealer.

Name_____

Title_____

Address_____

City & State_____



Two Manitowoc Cranes team up to unload intricate pump assembly at Tidewater Delaware Flying A Refinery construction site.

24 Manitowoc Cranes Help Raise Giant Tidewater Oil Refinery

A total of 24 Manitowoc Cranes is working on the erection of the huge new Tidewater Oil Company Delaware Flying A Refinery near Delaware City, Del. Covering 5000 acres, the ultra-modern refinery will be the biggest built at one time as a single unit, with an expected throughput of 130,000 barrels of oil per day.

C. F. Braun and Co., Alhambra, Calif., designers and engineers for the project, is also handling actual construction of the refinery. The Braun Co. is using 22 Manitowoc crawler cranes, and two Manitowoc Mobile Cranes, units ranging in capacity from 40 to 80 tons, with booms 60 to 120 feet long.

A tremendous variety of jobs are handled by the Manitowocs. Some of the work includes: unloading freight cars, stacking incoming materials, transporting machinery to the construction site, pouring concrete, erecting scaffolding and rigging poles, setting steel, erecting 250 miles of elevated pipeline, laying underground conduits and setting high velocity water pumps on foundations.

Machine downtime on the Tidewater project has been negligible, with no holdup of work due to breakdowns . . . a real testimonial to the ruggedness and solid engineering for which Manitowoc cranes are famous!

Your Manitowoc Distributor will be glad to supply all the details on Manitowoc's versatile line of cranes and excavators — call him today!

MANITOWOC ENGINEERING CORP.,
MANITOWOC, WIS.

What the Men on the Job Think of Their Manitowocs!

"For steel erection you can't beat Manitowoc. One of the finest machines on the market."
Don Rossillo, Crane Operator

"The 2800 is the best motor crane on rubber that was ever made. It will pick up 20 tons without an outrigger and walk away with it."
Jack Streets, Ironworker's Foreman

"For hooking rigs, setting steel, or pouring concrete, Manitowocs can't be beat. And they stand up very well. Been working here an 8 hour day, 5 day week for about ten months and have never been down a minute for repairs."
R. L. Slater, Operator

"This mobile model 2800 is one of the best cranes for all-purpose work. They are strong and smooth running, both on the hoisting and the travelling on the road. Best machine I ever ran, truck or cat."
Prince A. Congleton, Operator

"Sturdiest truck crane on the market, and I've run them all."
Harry Racine, Operator

MANITOWOC
SHOVELS 1 - 5½ YD. Speed Crane CRANES 20-100 TON

FOR CONSTRUCTION EQUIPMENT ENGINES • • •

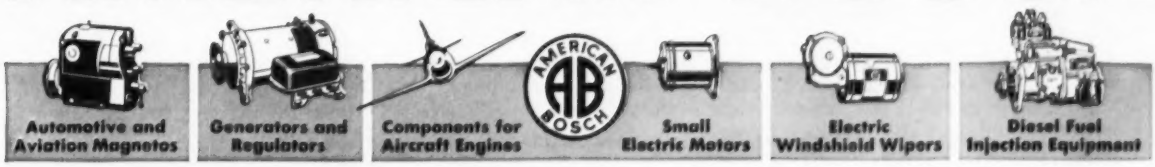
Better to Start with—
Best in the Long Run!

AMERICAN BOSCH
MAGNETOS

Steadily improved electrical and mechanical characteristics give these famous Magnetos greater power for lightning-fast starts, PLUS the traditional built-in stamina that assures *years* of constant, trouble-free ignition in Construction Equipment engines. This is why these power-packed Magnetos are so steadily used as original equipment by so many leading engine builders.

On all your present equipment you can have this instantaneous spark efficiency and matchless dependability at all engine operating speeds and loads. For, there's an American Bosch Magneto replacement precisely engineered for all spark-ignited engines—in dozers, gas-engine driven compressors, pumps, graders, paving machines and spreaders. Moreover, American Bosch can serve you well at your job-site, through one of the largest and most efficient field service organizations. There's an AB Service Agency near you. Write to us today for Magneto replacement application data on your construction equipment engines. American Bosch, Springfield 7, Mass. A Division of American Bosch Arma Corporation.

AMERICAN BOSCH



CONTRACTOR-BUILT RIGS . . . continued from page 94

SECOND UNLOADING MACHINE takes 22-yd load from Cook Bros. bottom-dump and piles it 50 ft away by pair of 36-in. belt conveyors. Somewhat slower than slinger-unloader, this unit still unloads truck in 40 to 45 sec. It weighs 45 tons vs other's 55.

For unloading sand at the 3-mi-long beach site after an average 2½-mi haul, Hensler built another ingenious unit. This one, into which the trucks dump, shoots the sand out in four separate streams to deposit it from 40 to 90 ft away. Thus the trucks don't have to try to navigate through the loose sand, and the sand itself is given a preliminary spreading. In addition, the device is fast—it distributes a 22-yd load in just 33 to 45 sec, depending on type of sand.

The unloader is a structural steel frame fitted with ramps, hoppers, conveyors, and sand pilers. Via a 28-ft hinged ramp, loaded trucks drive onto a 48-ft long center section raised 5 ft above ground. Sand bottom-dumped from the trucks falls into four different hoppers, each of which feeds directly onto its own 24-in.-wide inclined belt conveyor.

The belts move at 2,800 ft per min and carry sand 22 ft upward at an 18-deg angle. From these conveyors, sand drops 5 ft through funnels into a battery of four Stephens-Adamson sand pilers mounted side by side. These units fling the sand away to land an average 70 ft from the haul road. Each S-A piler can handle a maximum 750 tph. And the four units average 2,000 tph during a 16-hr day, including downtime and waits between truck loads of sand.

Twelve electric motors operate the unloading machine. They drive conveyor belts, sand pilers or slingers, and four vibrators—two on the hoppers and two on the slinger. Power comes from two 100-kw diesel-electric sets with International UD-24 engines and Palmer generators.

Extra Work; Extra Rig

Design of the Scattergood Station called for a 200,000-sq-ft foundation to be excavated 28 ft below the level of the bottom terrace. To speed work on this hole, it was dug simultaneously with terrace leveling. For this operation, Hensler built a second unloader to handle the temporary extra volume of sand.

Main structure is similar to the regular unloading machine, but the center truck-dump platform is 1 ft higher. Trucks discharged into two hoppers, each feeding a 26-in belt conveyor. Conveyors lifted sand 17 ft above ground level and 50 ft out from the unloading truck. There it was merely piled for later spreading on the beach by bulldozer.

Even though this machine was built for only temporary use, it was still a fast worker—it unloaded the 22-yd trucks in 40 to 45 sec. And now, with two loaders in operation at the excavation site, the second unloader is still carrying on.

Both of the unloaders are skid mounted and can be re-positioned by tractors as conditions warrant. The slinger unloader, which is moved ahead in jumps of about 150 ft three times a week, weighs approximately 55 tons. The second unloader weighs close to 45 tons.

Maximum daily production of the loader-unloader setup is 19,000 yd in 16 hr, and the average is 12,000. R. R. Hensler himself is in charge of his Scattergood job, with Oscar Paul as superintendent.

HOW TO HANDLE WET JOBS

#36 of a Series

Project: 400-ft-diameter clarifier, Mobile, Ala.
Engineers & Constructors: INTERNATIONAL PAPER COMPANY
Pumping Contractor: WELLPOINT DEWATERING CORP., NEW YORK

Giant clarifier built by cost-cutting plan as . . .

Swamp is Dewatered 27 ft Below Tide Level

Design a job with imagination — get rid of ground-water interference — and here's an example of what can be accomplished:

• **Savings on materials:** Ordinarily the sides and bottom of a clarifier are paved with concrete. In this instance, a clay lining was successfully used—the clay obtained economically from nearby borrow areas.

• **Savings of time:** With job dry, fine grading of a sand base under the clay lining was done rapidly by machine.

• **Savings on maintenance:** The Griffin Wellpoint system used during construction was left permanently in place. In the future, when the tank is emptied for its periodic cleanings, these same wellpoints stand ready to lower ground water and hold lining stable. Catalogue on request.

GRIFFIN WELLPOINT CORP.

DEWATERING • SOIL STABILIZATION • JETTING

MAIN OFFICE: 881 East 141st Street, New York 54, N. Y.

Jacksonville, Fla.: 2016 E. Adams St. • Hammond, Ind.: 548 Indiana St. • Houston, Tex.: 6100 Harvey Wilson Drive
In Canada: Construction Equipment Co., Ltd. • Toronto, Montreal, Halifax, Edmonton

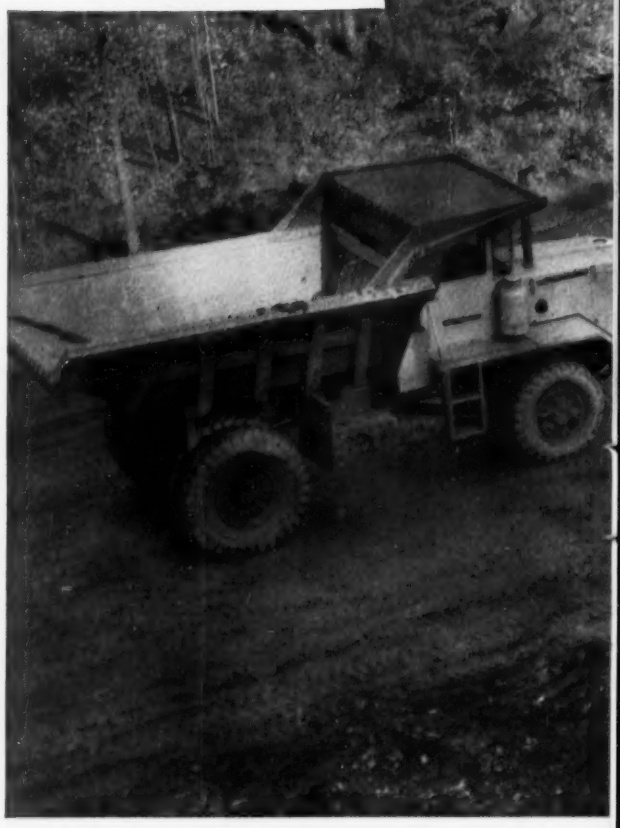
3 Payhauler® Units *match 4 competitive rigs* on "W.Va.'s most dangerous road job!"

Earn 25% equipment saving ...33% production gain for Acme Construction Company, Bluefield, West Virginia

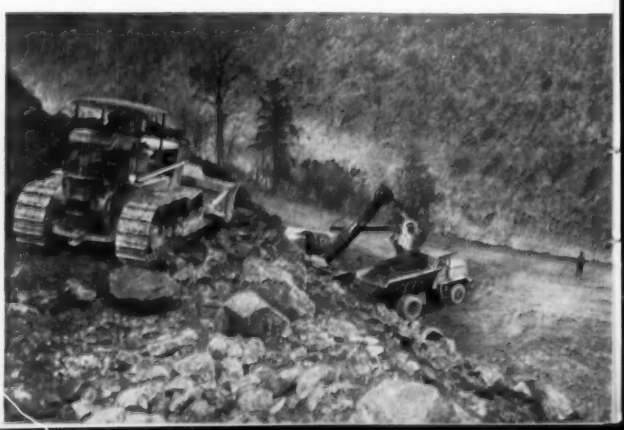
In the mountain-rugged, rough and rocky country of southern West Virginia, three International "65" Payhauler trucks are doing the work of four similar competitive units...on the same job...under the same tough conditions. The location is Welch, where Acme Construction Company of Bluefield, is moving 100,000 cubic yards of rocky material "clover-leafing" U. S. Bypass Route 52...labeled by Jim Chase, superintendent, as "West Virginia's most dangerous road job."

All haul units on the job are in the same capacity and power class. They're all loaded by a 1½ cu yd shovel...they all travel the same ½-mile to the fill and the same return route. Yet, the Payhauler trucks because of their ample, turbo-charged diesel power, plus load-matched gear ratios, smooth the get-away —and permit quick shifting into time-gaining, hill-climbing higher gear! This performance under rough and rugged conditions has caused Jim Chase to say, "We get the same production from 3 International '65' Payhaulers as we do with our four other units...a 25% savings in equipment, a 33% gain in production."

Prove to yourself how much an International "65" or "95" Payhauler will boost your off-highway hauling capacity. Try its safe and easy full-load maneuverability. Test the power-transfer efficiency of its long-lasting Cerametallic-faced clutch. Ask your International Construction Equipment distributor for a demonstration!



International TD-24 dozes shot-rock down the slope to 1½ cu yd shovel and easy-loading International "65" Payhauler. 250,000 pounds of dynamite were used...about a pound to every 3 yds of rock!



INTERNATIONAL® CONSTRUCTION EQUIPMENT

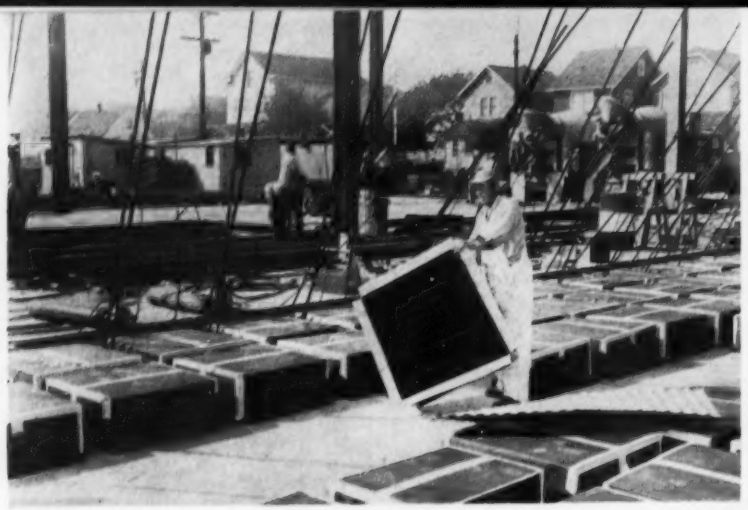
International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Ample power from a 250 hp Turbo-charged engine drives the model "65" at production-boosting speeds...with fuel consumption savings of 10% or more. Ten-speed transmission gives right gear for every grade...every road condition.

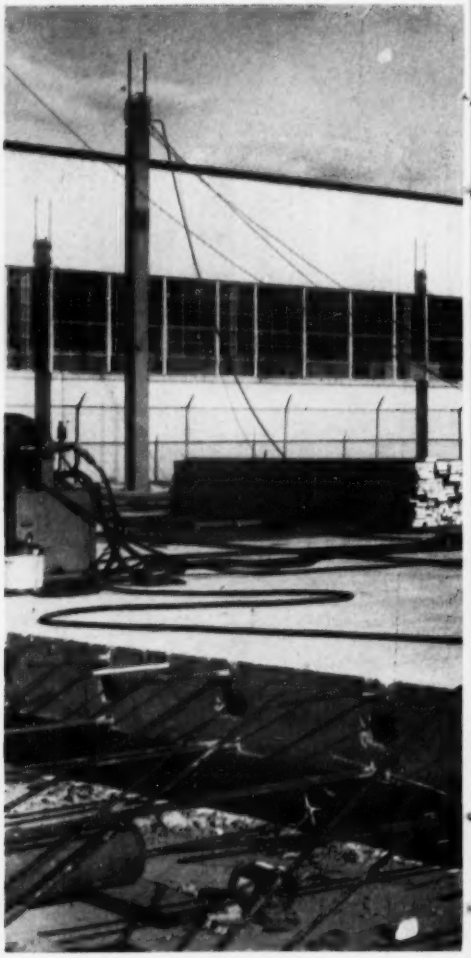
Double acting hoist cylinder in all stages with *106,300 pounds of force in first stage* permits dumping heaped loads in less than 10 seconds. Hydraulic snubbing action prevents undue stress on hoist cylinders and "gentles" body return to frame.

Strongest frame in its class and big 10 x 14 foot high tensile steel Payhauler body permit faster, more carefree loading of rock or other tough materials. Model "65" Payhauler body gives you big, profit-boosting, 18-ton capacity, model "95" a husky 24 tons.



WORKMAN PLACES Container Corp.'s fiberboard boxes over floor slab to serve as forms for grid-type lift slab.

CAST STEEL CAP slips over column and rests on form slab. Cap, used for lifting, also secures slab to column tops.



UP SHE GOES!—Slab inches skyward at a rate of almost 2 ft per hr. Resin compound

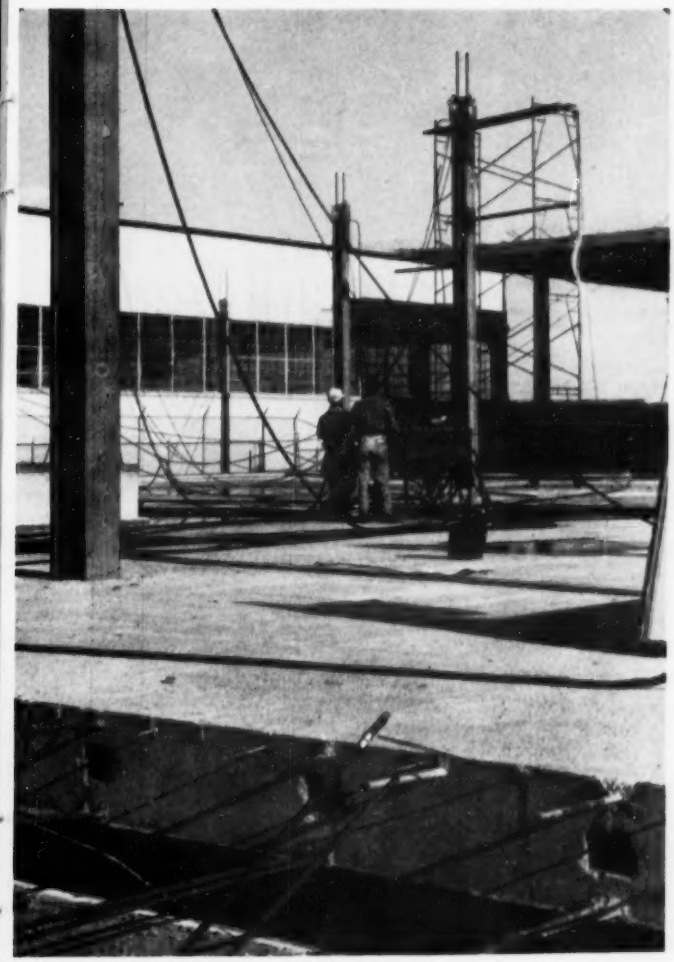
POUR of lightweight concrete follows placing of reinforcing steel. Concrete cures for 28 days before lift is begun.

Record

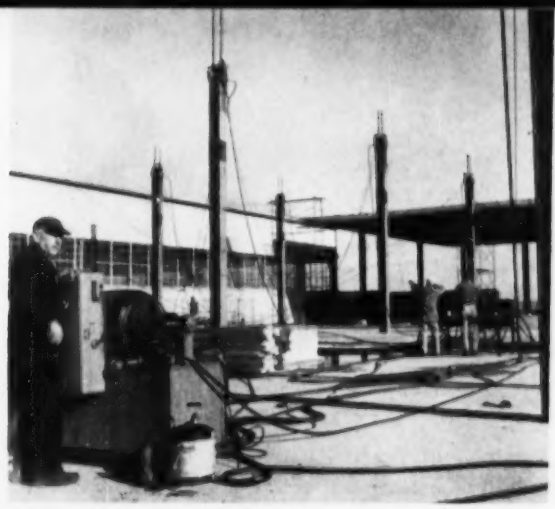
THE LITTLE GROUP of men huddled together pulling their coats up around their ears to ward off the biting wind. Their faces were tense. There was good reason. They had gathered to watch the raising of the biggest and heaviest lift slab ever attempted.

It was one of three slabs being lifted by the Youtz-Slick method for the new $500,000 Standard Tool & Manufacturing Co. plant at Lyndhurst, N. J.

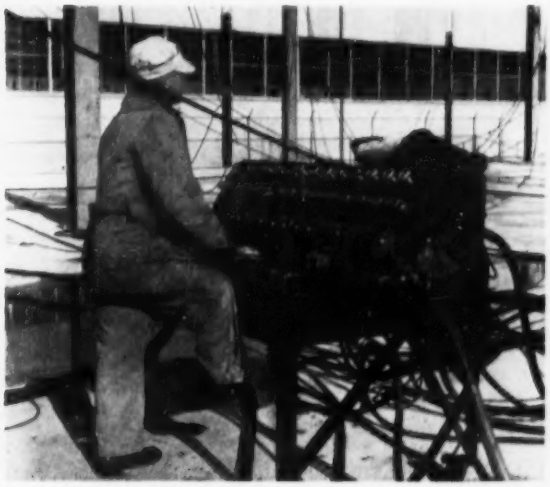
Why the anxiety? Lift slabs normally are of flat-plate design; columns rarely exceed 24-ft centers; and a slab's area is seldom more than 20,000 sq ft. This slab had an area of 32,600 sq ft; it weighed 1,466 tons; and it was to



mopped over form slab eased separation of two slabs. Corner of slab (in background) belongs to a smaller slab lifted earlier.



PUMPING UNIT feeds hydraulic fluid to control panel that in turn distributes it to jacking units set on columns.



CONTROL PANEL has 12 regulators each of which controls a single jack. Jacks can be operated simultaneously.

Lift Slab Weighs 1,466 Tons

be lifted on columns spaced at 40-ft centers.

What might go wrong? The jacks could fail. Each was rated at 150,000 lb. Each would be strained to its maximum capacity. Then, the slab might stick to the floor slab beneath it and crack. Finally, the columns themselves might buckle.

How did it go? Richard Brooks, general superintendent for Fred J. Brotherton, Inc., Hackensack and Harrisburg, N. J., contractors, gave a hand signal. New England Lift Slab Co. workmen, lift slab specialists charged with the raising, went to work.

A hydraulic pumping unit began feeding fluid to jacks set atop the columns. A workman at one of the two control panels flicked a dial, and the slab rose ½ in. at one column point. The operation was repeated at column after column, lifting the slab ½ in. at each point.

"Daylight"

Progress was slow. Hours ticked by as workmen checked column points after each individual lift. No cracks. The lift continued smoothly. Then, shortly after noon, a man cried out, "Daylight!"

All points between form slab and lift slab were clear. The largest slab ever attempted was in the air. The rest of the lift would be easy. By the following morning the slab would be locked safely in place.

"I suppose," said Sol Marenberg, of Garfinkle & Marenberg, designers of the slab, "that we theoretically were certain the slab would go up. But there's always tension present at a first of any kind."

It took a lot of work to prepare for the lift. A month earlier men began forming and pouring the slab and setting up columns and jacking equipment.

The building's concrete foundation, which measures 240x460 ft, had been poured much earlier. And the floor slab, 6 in. thick, had been poured on the ground to serve as a form for the lift slabs.

Columns, bolted to concrete piers, are 26 ft high. Brotherton

continued on next page

Black Cover Green Stripe

THAT SHOWS IT'S

"NEWTYPE"

SUCTION AND DISCHARGE HOSE

Built to Assure Lower-Cost Pumping Operations

You can be *sure* that the hose you put on your pumps will help them operate with maximum efficiency, *always*, when it has a black cover, green spiral stripe and the famous "clover leaf" trademark. This triple identification means "Newtype" . . . Goodall's "Standard of Quality" Suction and Discharge Hose that's built to stay on the job *longer*, and will not kink, buckle or collapse. *You can't beat it* for assurance of steady, low-cost pumping operations! Made in sizes 1¼" to 4", inclusive, in maximum lengths of 50 feet.

"If it's GOODALL, it MUST be GOOD!"

Contact Our Nearest Branch for Details and Prices

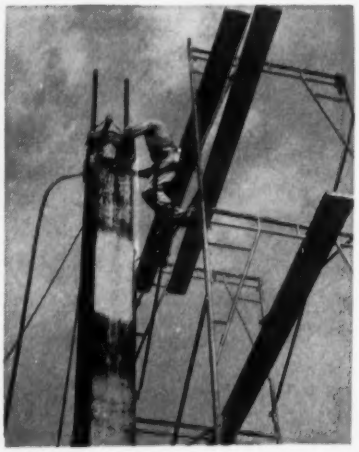
Standard of Quality—Since 1870

HOSE · BELTING · FOOTWEAR · CLOTHING AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches and Distributors Throughout the United States and in Canada

RECORD LIFT . . . continued



A JACK STICKS!—Repairman rolls up a scaffold tower and makes repairs.

erected sixty-four 14 WF 87's for the job. The big slab itself took 24.

Slabs are waffle-design. Brotherton forms them by placing Container Corp.'s corrugated boxes 34 in. square by 13 in. deep over the form slab on 40-in. centers. This leaves 6-in.-wide ribs or joists.

During forming, a cast iron lift collar is slipped down around each column and set to rest on the floor slab. Reinforcing steel then is placed.

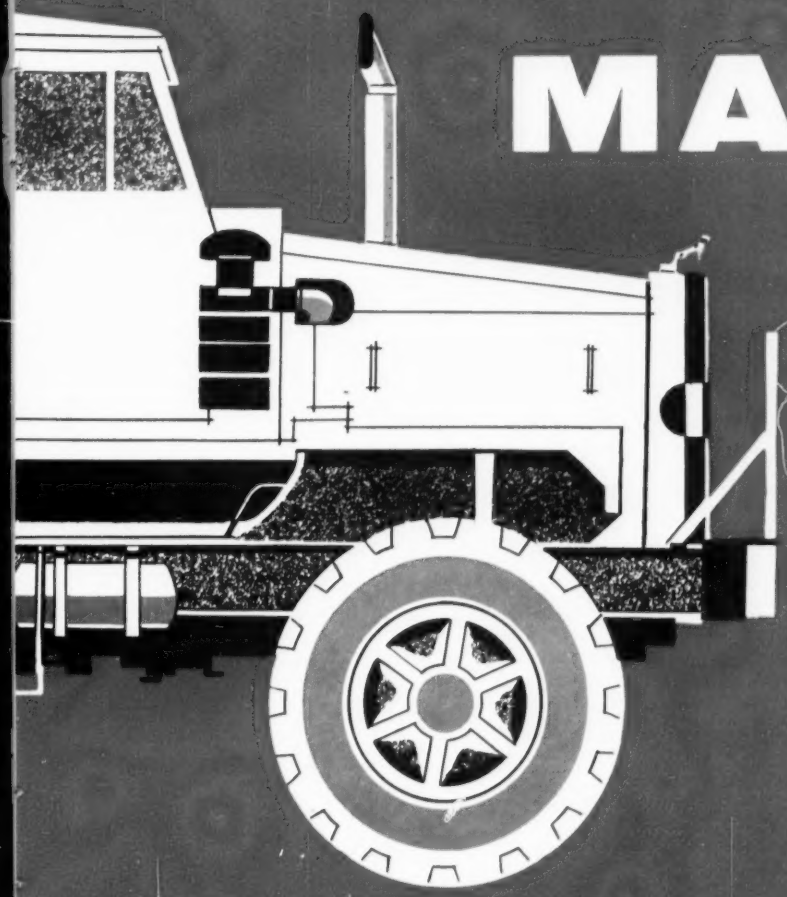
Before concreting begins, all exposed floor surfaces are mopped over with Techkote, a special wax base resin used to facilitate separation of the two slabs. The slab next is poured with lightweight concrete designed to reach 3,000 psi after 28 days.

Jacking units, consisting of hydraulic jacks and two 2½-in. dia steel rods per unit, are placed over the column heads. Threaded rods extend down and screw into the cast iron lift collars embedded in the concrete. Fluid lines attached to the jacks run down to a control panel and then to a hydraulic pumping unit.

When the slab has been fully lifted into place, steel plates are welded to the columns directly under the slab. Once all slabs have been welded, pressure is released from the jacks, and the slab comes to rest on the plates.

New England's vice president, Robert Englehoff, said the lift cost about 30¢ psf of slab. Building the slab in place would have cost about $1 psf in formwork.

NEW MACK



heavy-duty four- and six-wheel dumpers

15- to 34-ton capacity

* LARGEST SELECTION OF HEAVY DUMPERS

Mack offers you the most complete line of dumpers for mining, quarrying, road building, construction. From heavy-duty 170 horsepower, four-wheel dumpers with 15-ton capacities to super-duty 400-horsepower, six-wheel dumpers with 34-ton capacities, Mack provides the economy and performance that can mean bigger hauling profits for you.

* CHOICE OF ENGINES

Mack offers you a choice of engines . . . Cummins diesels in the 300- and 400-horsepower class . . . or Mack Thermodyne and Cummins diesels in the 170 to 205 horsepower class. No need to alter existing maintenance facilities to handle new engine makes . . . you get the truck you want with the engine you want.

* OUTSTANDING PERFORMANCE

When you buy Macks, you know that you are getting top performance, outstanding economy, maximum dependability—qualities that have made Mack the acknowledged heavy-duty truck leader in the industry. Moreover, Mack dumpers are planned for accessibility throughout . . . engines are easily reached, no place in the suspension ever needs adjustment—these and many more Mack features reduce maintenance costs and make routine servicing easier. And in Macks, you get the finest transmissions and axles available . . . made by Mack and found only in Macks!

* COMPETITIVELY PRICED

Mack off-highway dumpers are priced right in line with competitive makes. Yet, with Macks, you get those "extras" that mean more payloads or lower hauling costs . . . cabs engineered for maximum driver efficiency . . . specially designed components with extensive use of heat-treated alloy steels . . . single-unit all-welded frames that can take plenty of hard knocks . . . outstanding performance and economy from a complete line of engines.

* STOCK DELIVERY

All 15 and 22½-ton Mack dumpers are available from stock. The units you want with the engines and transmissions you want can be supplied upon gratifyingly short notice. There are no delays, no production schedules for you to worry about. For more information on delivery, contact your local Mack Dealer or Representative.

MACK LRX

capacity: 15 tons

This four-wheel, off-highway dumper combines a big 15-ton rated capacity with outstanding maneuverability. Either a Mack or Cummins diesel engine of the 200-horsepower class—along with heavy-duty clutch, 10-speed transmission, and Mack's Planidrive rear axle assembly—gives plenty of pulling power for long hauls on steep grades. Rugged, unified frame assembly, powerful air brakes, and comfortable cab with driver's position offset to the left assure the top performance and efficiency that have made the LRX a highly popular dumper in mine, quarry, and road-building operations.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:	14.00-24 Rear Tire
Wheel Base	12′ 6″
Platform	9′ 1″
Overall Width	10′ 9½″
Overall Height	10′ 5″
Overall Height (Body Raised)	18′ 8″
Overall Length	24′ 7½″
Turning Circle Diam. (To outside edge of tire)	60′
Weight (Chassis, Body & Hoist)	33,000 lbs.
Payload	30,000 lbs.

ENGINE (Diesel):

Model	END 673
Make	Mack, Thermodyne
Type	Naturally aspirated
Number of cylinders	Six
Bore and stroke	4⅛″ x 6″
Piston displacement, cu. in.	672
Brake horsepower (@ 2100 r.p.m. (gov.)	170
Max. torque (@ 1200 r.p.m.	480 lb.-ft.

CLUTCH (Available with END 673 only):

Type	Mack single-plate, dry
Area of engagement, sq. in.	253

ELECTRICAL SYSTEM:
Voltage and capacity — 12 V., 50 Amp. (24 V., Starting)

TRANSMISSION:

Type	Mack selective, constant mesh
No. of speeds, forward	Nine
reverse	Two

FRONT AXLE:
Make — Mack Reversed-Elliott, dropped forged I-beam

REAR AXLE:

Make	Mack Planidrive
Drive	Dual Reduction
Final Drive (3rd reduction)	Planetary gear train within wheel hubs
Total Ratio	16.5

BRAKES (Air):

Compressor	Tu-Flo
Type	Internal expanding
Front, size	17¼″ x 5″ x ¼″
Rear, size	20″ x 7″ x ¼″
Hand, size	12″ x 5″ x ⅜″, Bendix

FRAME:

Side-members, size	12½″ x 6¼″ x ½″, wide flange I-beam, rolled section
Section modulus	60.7 (per rail)

SPRINGS:

Front, type	Semi-elliptic
Rear, suspension	Semi-rigid, axle saddle mounted to frame

WHEELS:
Type — Cast, spoke

STEERING GEAR:
Control — Manual

TIRES:	Front	Rear
Size	12.00-24 (16P) Rib	14.00-24 (20P) Lug

CAB:
Type: Heavy-duty off-highway, closed, all-steel welded. Offset 10¾″ to left of chassis centerline provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Front and rear tow pins; air horn on cab roof; cab entrance steps and platforms; rear view mirror, left side; channel type front bumper; dual windshield wipers; stop-tail light; rim lug wrench and handle.

HOIST:
Make & model — Heil
Type-Twin, double-acting, 8″ diameter, hydraulic cylinders with 24″ stroke, 70° dumping angle.

BODY:

Type	Rock, with scoop end
Make	Heil
Capacity, line of plate	9.8 cu. yds. struck

Construction: ¼″ steel plate shell bottom; ⅜″ sides and header; ½″ wear and side bevel plates; ¼″ canopy. 3″ x 5 lb. channels between floor plates either side of a 1⅝″ edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE (Diesel):

Model	NHB	ENDT 673
Make	Cummins	Mack, Thermodyne
Type	Naturally aspirated	Turbocharged
Number of cylinders	Six	Six
Bore and stroke	5⅛″ x 6″	4⅛″ x 6″
Piston displacement cu. in.	743	672
Brake horsepower (@ 2100 r.p.m. (gov.)	200	205
Max. torque (@ r.p.m.	1200	1400-1600
pound-feet	537	560

CLUTCH (Included with NHB and ENDT 673):

Type	Mack two-plate, dry
Area of engagement, sq. in.	416

TIRES:	Front	Rear
Size	13.00-24 (18P) Rib	16.00-25 (20P) Lug

BODY:

Type	Flared Quarry
Make	Heil
Capacity, line of plate	11 cu. yds. struck

Construction: ¼″ steel plate shell bottom; ½″ sides; ⅝″ header; ½″ wear and side bevel plates; ¼″ canopy. 3″ x 5 lb. channels between floor plates either side of a 1⅝″ edge-grain hardwood middle section filler.

Exhaust Heating: Provisions for exhaust heating of dump body available.

Body Equipment: (for std. and opt. bodies): (9) ¼″ x 6″ alloy wear bars; rock ejectors; ½″ alloy wear plate; welded-on side boards (for std. body only).

CHASSIS EQUIPMENT: Automatic radiator shutters; Wagner "BB" (24 hour chart 0-3500 r.p.m.) tachograph, in place of standard tachometer; speedometer; hubodometer, left front wheel; Vickers power steering; front wheel limiting valve; hand control valve to operate rear service brakes; low air pressure indicator, Wig-Wag type; radiator guard; 25,000 B.T.U. hot water cab heater with defrosters; spare rim; hydraulic jack, 20-ton; air starting.

MACK LRSW

capacity: 30 tons

Powered by a 300-horsepower engine, this 30-ton, six-wheel dumper has what it takes for off-highway operation in mines, quarries and earth-moving projects. Smooth application of power to its balanced, four-wheel drive bogie is obtained by an air-assisted clutch and overgear transmission with two-speed compound or torque converter. Convenient location of controls, angle steering column, hydraulic steering booster, and extreme left driver position give easy and efficient handling. Best materials, precision manufacture, and specially engineered components make the LRSW capable of withstanding the toughest 'round-the-clock hauling.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	16′ 10″
Platform	14′ 11½″
Overall Width	11′ 1⅝″
Overall Height	11′ 5⅛″
Overall Length	29′ 4″
Overall Height (Body Raised)	24′ 10″
Turning Circle Diam. (To outside edge of tire)	78′
Weight (chassis, body & hoist)	60,000 lbs.
Payload	60,000 lbs.

ENGINE (Diesel):

Model	NHRBIS
Make	Cummins
Type	Supercharged
Number of cylinders	6
Bore and stroke	5½″ x 6″
Piston displacement, cu. in.	743
Brake horsepower @ 2100 r.p.m. (gov.)	300
Max. torque @ 1500 r.p.m.	818 lb.-ft.

CLUTCH:

Type	Mack two-plate, dry
Area of engagement, sq. in.	416
Actuation	Manual, with air assist

ELECTRICAL SYSTEM:

Voltage and capacity	12 V., 50 Amp. with 24 V., starting

TRANSMISSION:

Type	Mack two-lever, Duplex
No. of speeds, forward	Eight
reverse	Two

FRONT AXLE:

Type — Mack Reversed-Elliott, drop forged I-beam

BOGIE:

Make	Mack Planidrive
Final drive, type	Four-wheel, planetary
Inter-axle differential, type	Mack concentric cam and plunger Power Divider
Carriers	Mack Dual Reduction
Total Ratio	18.18

BRAKES:

Type and actuation	Internal expanding, inclosed, air
Front, size	17¼″ x 5″ x ¼″
Rear, size	20″ x 7″ x ¼″
Hand, size	16″ x 3″ x ¼″, four-shoe, disc

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	13 15/16″ x 8″ with ⅝″ web and top flange, ⅞″ bottom flange
Section modulus	84.5 per rail

SPRINGS:

Type, front	Semi-elliptic
rear	Semi-elliptic, inverted
Suspension, Mack	Rubber Shock Insulators

SHOCK ABSORBERS, FRONT:

Type — Houdaille, hydraulic

TIRES (Lug):	**Front**	**Rear**
Size	14.00-24 (20P)	16.00-25 (20P)

WHEELS — Cast, spoke

STEERING GEAR:

Power steering assist — Vickers hydraulic booster

CAB:

Type — Heavy-duty off highway, closed, all-steel, welded. Offset 10¾″ to left of chassis centerline provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Hubodometer; screen type radiator guard; front and rear tow pins; air horn; rear view mirror, left side; exhaust through hood with in-line muffler; channel type front bumper; door in hood side for access to oil filler and dip stick; insulating dash mat; wig-wag low air pressure indicator; windshield wipers; stop and tail light; back up light; rim lug wrench and handle.

HOIST:

Make — Heil

Type — Twin, double-acting, 10″ diameter, hydraulic cylinders with 40″ stroke, 70° dumping angle with power return.

BODY:

Make and type	Heil, Rock-scoop end
Capacity, line of plate	21 cu. yds.

Construction: ¼″ steel plate shell bottom; ⅜″ sides and header; ½″ wear and side bevel plates; ¼″ canopy. 3″ x 7.1 lb. channels between floor plates either side of a 2″ edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE:

Make and model	Cummins, NRTO
Number of cylinders	Six
Bore and stroke	5½″ x 6″
Piston Displacement cu. in.	743
Brake horsepower @ 2100 r.p.m. (gov.)	335
Max. torque @ 1500 r.p.m.	900 lb.-ft.
Turbocharger	Turbine, exhaust driven

TRANSMISSIONS:

Westinghouse Converter and Mack 4 Speed Transmission. Clutch—2-plate, 17″

Allison Torqmatic Converter and Allison Transmission

WHEELS, TIRES:

Front & rear Wheels, type	Cast spoke
Tires, size	16.00-25
Ply-rating, front	20 or 24
rear	24

BODY EXHAUST HEATING: Provisions to permit passage of exhaust gases through area between wear plate and shell bottom; controlled by baffles and exhausted through second rear vertical bolster on right side.

CHASSIS EQUIPMENT: Front wheel brake limiting valve; separator for air system; 25,000 B.T.U. heater with defrosters; windshield defroster fan; engine chrome cylinder liners and stellite inlet valve seats; tachograph, Wagner "BB", 24-hour chart 0-3500 r.p.m. (in place of standard tachometer); speedometer (single-hand); exhaust outlet under cab suitable for attachment to body for body heating; automatic (air) radiator shutters; 20-ton jack, hydraulic; spare rim.

MACK LVX

capacity: 22½ tons

This four-wheel dumper with its 22½-ton rated capacity provides maximum payloads at minimum unit cost. Equipped with a 300-horsepower engine, over-gear transmission with two-speed compound or torque converter, and Mack's exclusive Planidrive rear axle assembly, it is powered to give top performance under the most punishing operating conditions.

All-welded, single-unit, alloy-steel frame gives LVX's stamina and rugged durability. Elbow steering column, hydraulic steering booster, two-plate air-assisted clutch, and job-engineered cab with extreme left driver position assure maximum operating efficiency. From top to bottom, this big Mack gives you the "extras" that mean minimum hauling costs.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	14' 2"
Platform	9' 11"
Overall Width	11' 2"
Overall Height	11' 6¼"
Overall Length	26' 8½"
Overall Height (Body Raised)	21'
Turning Circle Diam. (To outside edge of tire)	62'
Weight (chassis, body & hoist)	40,800 lbs.
Payload	45,000 lbs.

ENGINE (Diesel):

Model	NHRBIS
Make	Cummins
Type	Supercharged
Number of cylinders	Six
Bore and stroke	5½" x 6"
Piston displacement, cu. in.	743
Brake horsepower (@ 2100 r.p.m. (gov.)	300
Max. torque (@ 1500 r.p.m.	818 lb.-ft.

CLUTCH:

Type	Mack Two-plate, dry
Area of engagement, sq. in.	416
Actuation	Manual, with air assist

ELECTRICAL SYSTEM:
Voltage and capacity . 12 V., 50 Amp. (24 V. Starting)

TRANSMISSION:

Type	Mack selective, constant mesh
No. of speeds, forward	Eight
reverse	Two

FRONT AXLE:
Type . . . Mack Reversed-Elliott, drop forged I-beam

REAR AXLE:

Make	Mack Planidrive
Drive	Dual reduction, spiral bevel
Final drive (3rd reduction)	Planetary gear train within wheel hubs
Total Ratio	17.66

BRAKES (Air):

Compressor	Tu-Flo
Type	Internal expanding
Front, size	17¼" x 5" x ¼"
Rear, size	18" x 10" x ¼"
Hand, size	16" x 3" x ¼"

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	13 11/16" x 8" x ⅝" (Fabricated)
Section modulus	74.8 per rail

SPRINGS:

Front	
Type	Semi-elliptic
Suspension	Mack rubber shock insulators
Rear	
Type	Progressive rate, semi-elliptic
Suspension	Cam face slipper ends with radius rods

TIRES:	**Front**	**Rear**
Size	14.00-24 (16P) Rib	18.00-25 (24P) Lug

WHEELS:
Type . . . Cast, spoke

STEERING GEAR:
Power steering assist . . . Vickers hydraulic booster

CAB:
Type . Heavy-duty off-highway, closed, all-steel, welded. Cab offset 10¼" to left of chassis centerline provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Screen type radiator guard; front and rear tow pins; air horn on cab roof; dual windshield wipers; two air reservoirs; rear view mirror, left side; exhaust through hood with inline muffler; channel type front bumper; stop-tail light; rim lug wrench and handle.

HOIST:
Type . . . Twin, double-acting, outboard mounted, three section telescopic cylinder assembly directly connected to body and chassis through a universal joint arrangement providing a 70° dumping angle.

BODY:

Type	Rock, with scoop end
Make	Heil
Capacity, line of plate	14.8 cu. yds. struck

Construction: ¼" steel plate shell bottom; ⅜" sides and header; ½" wear and side bevel plates; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE:

Model	NRTO
Make & type	Cummins, turbocharged
Number of cylinders	Six
Bore and stroke	5½" x 6"
Piston displacement, cu. in.	743
Brake H.P. (@ 2100 r.p.m. (gov.)	335
Max. torque (@ 1500 r.p.m.	900 lb.-ft.

TRANSMISSIONS:
Westinghouse Converter and Mack 4-Speed Transmission. Clutch . 2-plate, 17".
Allison Torqmatic Converter and Allison Transmission.

FRONT AXLE: Special Heavy-duty, Reversed-Elliott, Drop Forged I-beam.

TIRES:	**Front**
Size	14.00-24 (20P) Rib

BODY:

Type	Flared Quarry
Make	Heil
Capacity, line of plate	15 cu. yds., struck

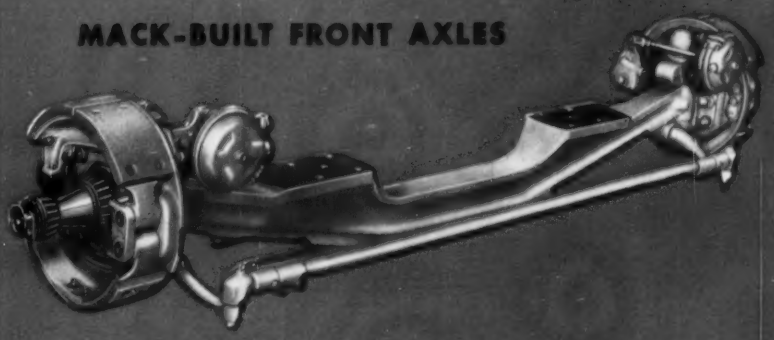
Construction: ¼" steel plate shell bottom; ½" sides; ⅛" header; ½" wear and side bevel plates; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

Exhaust Heating: Provision for exhaust heating of dump body available.

CHASSIS EQUIPMENT: Air starting, Ingersoll-Rand 9HP; Tachograph, Wagner "BB" (24 hour chart 0-3500 r.p.m.) in place of standard tachometer; Wig-Wag low air pressure indicator; hand control valve to operate rear service brakes; front wheel brake limiting valve; 25,000 B.T.U. hot water cab heater with defrosters; windshield fan mounted on windshield header; hub-odometer; air operated radiator shutter; Schwitzer air operated Thermo-controlled radiator fan hub; speedometer; back-up light; hydraulic jack, 20-ton; spare rims.

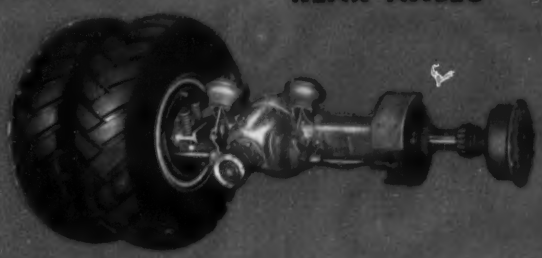
only MACK gives you features like these...

MACK-BUILT FRONT AXLES



Mack's reversed Elliott, forged I-beam front axles are made extra strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. Straight tie rod and rugged construction of air-actuated brake shoes insure top performance.

MACK-BUILT 2-WHEEL REAR AXLES

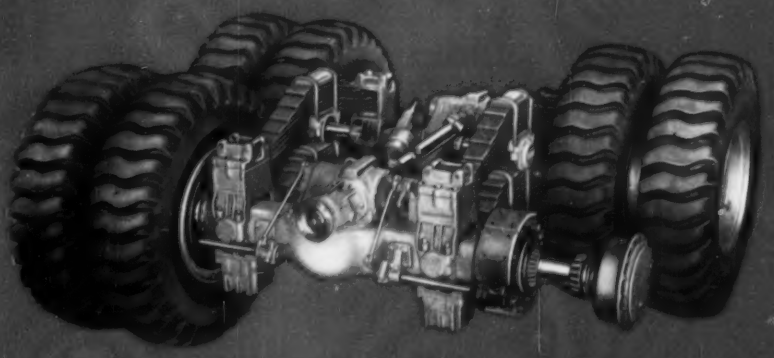


Mack's two-wheel, rear axle assemblies have an unmatched reputation for durability under strenuous service. The strongest, most wear-resistant materials are used throughout. Dual reduction, gear-type differential and Mack's famous planetary gear reduction at the wheel hubs (Planidrive) provide the smooth distribution of power needed for top truck performance. Planetary gears can be serviced or repaired without removing tires or disturbing wheel bearing adjustment.

MACK-BUILT TRANSMISSIONS

Dependable performance and long life are standard in Mack transmissions. Shown here is the heavy-duty overgear transmission used for the LRVSW, LRSW, and LVX off-highway dumpers. The four-speed main transmission and two-speed compound are assembled as a unit to give eight forward and two reverse speeds. The four-speed main transmission without the two-speed compound is offered in combination with torque converter. All gears use Mack tetrapoid or quadrapoid tooth design and are drop-forged, case-hardened, and generator-ground . . . gears noted for lasting the life of the truck.

MACK-BUILT 4-WHEEL BALANCED BOGIES WITH EXCLUSIVE POWER DIVIDER



Under the worst conditions of mud, loose gravel, or difficult terrain, you get maximum pulling power with Mack's four-wheel drive Balanced Bogies because exclusive Mack Power Dividers apply power to the wheels with traction. Planidrive final reduction gears in all four hubs provide needed reduction without excessively large carriers, differentials, or axle shafts. Maintenance is reduced to a minimum.

MACK LRVSW

capacity: 34 tons

The 34-ton rated capacity of this super-payload, six-wheel dumper assures minimum haulage costs for the big earth-moving jobs. Equipped with a 400-horsepower engine, four-speed overgear transmission, hydraulic torque converter or two-speed compound, and a balanced, four-wheel drive bogie, LRVSW's can negotiate severe grades fully loaded. Maneuverability and ease of handling are facilitated by such features as a hydraulic steering booster and air-assisted clutch. Heat-treated, stress-proportioned, single-unit frame gives the structural stamina needed to withstand severest operating conditions. All these features, and many more, contribute to unmatched durability and minimum haulage costs.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	16′ 10″
Platform	14′ 11½″
Overall Width	11′ 1⅝″
Overall Height	11′ 11″
Overall Length	31′ 7″
Overall Height (Body Raised)	25′ 2″
Turning Circle Diameter (To outside edge of tire)	78′
Weight (chassis, body & hoist)	68,000 lbs.
Payload	68,000 lbs.

ENGINE (Diesel):

Model	NVH-1200
Make	Cummins
Type	Naturally aspirated
Number of cylinders	12
Bore and stroke	5⅛″ x 6″
Piston displacement, cu. in.	1486
Brake horsepower (@ 2100 r.p.m. (gov.)	400
Max. torque (@ 1200 r.p.m.	1,075 lb.-ft.
Fuel tank and location	150 gal., back of cab

CLUTCH:

Make	Lipe Rollway
Type	Two-plate, dry
Area of engagement, sq. in.	571
Actuation	Manual, air assist

ELECTRICAL SYSTEM:

Voltage and capacity	12 V., 75 Amp.
Generator, make and type	Leece-Neville, alternator

STARTING SYSTEM:

Starting motor, type	Air
Make	Bendix-Westinghouse
Rating, horsepower	25
Cold starting aid	Ether injection

TRANSMISSION:

Type	Mack selective constant mesh
No. of speeds, forward	Four
reverse	One

TORQUE CONVERTER:

Model	Westinghouse 18″
Type	Single stage, hydraulic

FRONT AXLE:

Type	Mack Reversed-Elliott, I-beam drop forged

BOGIE:

Make	Mack Planidrive
Final drive, type	Four wheel, planetary
Inter-axle Differential	Mack concentric cam and plunger type Power Divider
Carriers	Mack dual reduction
Total ratio	18.18

BRAKES:

Type and actuation	Internal expanding, inclosed, air
Front, size	17¼″ x 5″ x ¼″
Rear, size	20″ x 7″ x ¼″
Hand, size	16″ x 3″ x ¼″, four-shoe, disc

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	Depth 14¼″, flange width 8″, flange thickness 1″
Section modulus	130.0 per side

SPRINGS:

Type	Semi-elliptic
Suspension, Mack	Rubber Shock Insulators

SHOCK ABSORBERS, FRONT:

Type	Houdaille, hydraulic

TIRES (Lug) Front and Rear:

Size	16.00-25 (20P)

WHEELS:

Type	Cast, spoke

STEERING GEAR:

Type	Worm and roller
Power steering assist	Vickers hydraulic booster

CAB:

Type	Heavy-duty off-highway, closed, all-steel, welded. Offset 10¼″ to left of chassis center-line provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Screen type radiator guard; hubodometer; front and rear tow pins; air horn; rear view mirror, left side; dual exhaust through hood with inline mufflers; channel type front bumper; rim lug wrench and handle; door in hood side for access to oil filler and dip stick; insulating dash mat; windshield wipers; stop and tail light; back up light.

HOIST:

Make & Type	Heil, twin, double-acting, outboard mounted, four-section telescopic cylinder assembly directly connected to body and chassis through a universal joint arrangement to provide maximum flexibility.
Dumping angle	70°

BODY:

Make & Type	Heil Rock, scoop end
Capacity, line of plate	24 cu. yds. struck

Construction: ¼″ steel plate shell bottom; ⅜″ sides and header; ½″ wear and side bevel plates; ¼″ canopy, 3″ x 7.1 lb. channels between floor plates either side of a 2″ edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

TRANSMISSION (In place of 4-Speed and Westinghouse Converter):

Make & Type	Mack Two-Lever, Duplex
Speeds Forward	8
Speeds Reverse	2

TIRES (Lug) Front and Rear:

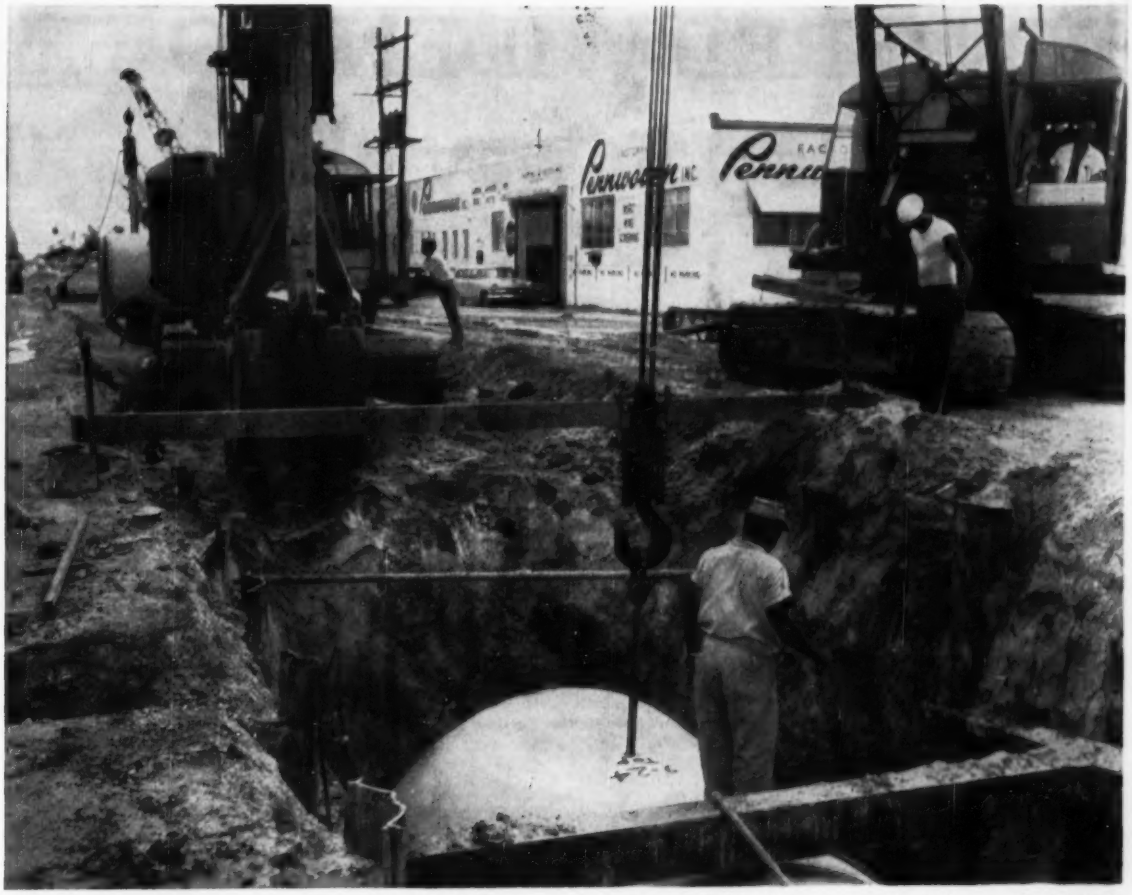
Size	16.00-25 (24P)

BODY EXHAUST HEATING: Provisions to permit passage of exhaust gases through area between wear plate and shell bottom; controlled by baffles and exhausted through second rear vertical bolster on right side.

CHASSIS EQUIPMENT: Front wheel brake limiting valve; 25,000 B.T.U. heater with defrosters; windshield fan; speedometer (single-hand); tachograph, Wagner "BB" 24-hour chart, 0-3500 r.p.m. (in place of standard tachometer); engine fan—Schwitzer-Cummins fan drive with automatic temperature control; exhaust outlet under cab suitable for attachment to body for body heating; 20-ton hydraulic jack; spare rim.

MACK first name for TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.



HEAVY PIPE section is lowered into trench by Lima crane. Instead of conventional hairpin for handling pipe, contractor employs bar and pin at top of pipe.

BACKHOE excavates limerock trench for 90-in. pipe. Note portable bracing frames.

Efficient Trench Bracing Speeds Pipe Laying

TRICKY LIMEROCK of southern Florida's east coast offers a wide variety of pipe-laying conditions. In some areas it is so hard that trench walls can be cut vertically without any danger of failure. But at other locations, especially where the water table is only a few feet below surface and where the limerock is anything but uniform, the sewer contractor must make his way behind heavy bracing. In this case, one of the keys to fast progress is efficient handling of uprights and cross braces—the framework that supports the walls between trench excavating and backfilling.

A good example of a fast pipe-laying operation, despite tough conditions, is a long stretch of 90- and 96-in. sewer under way in Northwest Miami. The contractor, Union Building and Construction Company of Passaic, N. J., is a newcomer to Florida construction. But trenching problems there are not unlike those encountered in the firm's home state, and they know how to handle them.

Trenches on the Florida job average 15 ft deep, and much of the material is wet and unstable. To maintain a placing rate of 18 lengths of 8-ft pipe per 10-hr day, Union depends on a large equipment spread, a portable bracing

continued on page 114

POWERED-WIDENING plus ...puts you way ahead with

Four Rex Powered-Widening Finishers assure the right size for your jobs: 10'-15', 12'-18½', 20'-25', 20'-32'. Also Model 5000 Lightweight Finisher for street paving.

Rex Concrete Finisher at work on U. S. 40 out of Indianapolis.

Cleveland job is speeded with Rex Concrete Finisher.

THE COMPLETE ROAD BUILDERS' LINE includes Rex Pavers, Paving Forms, Subgrade Planers and Testers ...Truck Mixers...Pumps...Railporter...Pumpcrete. Check coupon for complete illustrated literature.

CONSTRUCTION REX MACHINERY

PAVERS • SPREADERS • FINISHERS • FLOATS • CURING MACHINES • FORMS

CHAIN BELT COMPANY

MOTO-MIXERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER • PUMPS

FULL PORTABILITY

REX® Concrete Finishers

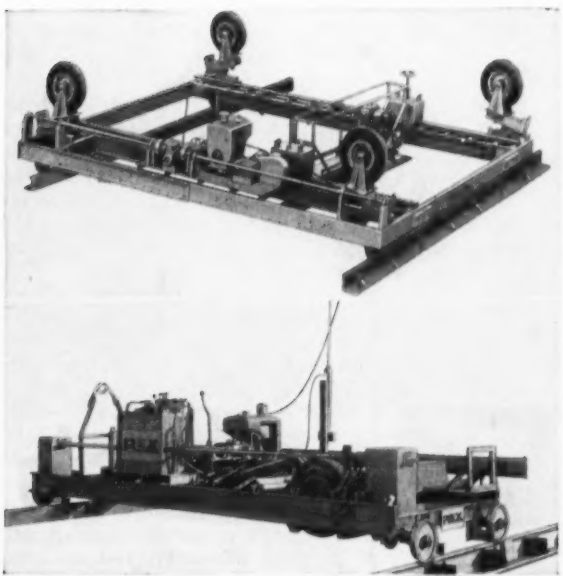
High speed...high capacity...and *highest* in operating advantages, these are your immediate rewards with Rex Concrete Finishers.

They have instantaneous powered-widening...right during operations. Width changes are made non-stop for tapered slab and interchange work. For straight lane work, you're also time ahead. They adjust to the right form size in moments.

Rex Powered-Widening is today's most advanced and trouble-free principle. With exclusive double-action design, *both* main frames are powered out or powered in *together*. It's a perfectly synchronized, foolproof system with positive, smooth chain, sprocket and rack operation. Its single lever is fast, easy.

Alone, Rex Powered-Widening is a finisher advantage that performs time-saving wonders. But note all the major work benefits of Rex Finishers...and you know why these modern, high-speed finishers are preferred by today's busiest contractors:

- **Easy-traveling portability...dual rubber-tire transportation wheels are hydraulically lowered, self-locking.**
- **Biggest screeds...16″ front and rear...hydraulic up-down operation.**
- **More speeds...fastest operation of all, full 110′ per minute travel speed. 6 forward, 6 reverse, 4 screed speeds...total 24 working combinations.**
- **Better balanced design with biggest channel frames (15″ members)...absolutely no side sway, weaving... no rocking of the forms.**
- **Smooth efficiency...ball and roller bearings used throughout...no bushings.**
- **All these advantages plus Powered-Widening with power on each main frame. No concentrating of action on a single point...no twisting, binding, etc.**



PROFIT FROM REX POWERED-WIDENING ON THESE BETTER PERFORMERS, ALSO...

Rex Float Finishers

The only longitudinal float finishers with the double-feature benefits of 2 engines...one sized right for form and float travel and the other for float reciprocation. Better finishing at a faster rate. Available with powered-frame widening and transportation rig.

Rex Automatic Curing Machines

Here's the fast operating speed that assures perfect curing jobs under the worst conditions, even on very hot, windy days when concrete is fanned dry fast. It can step up its speed 5 times the normal rate and actually overtake the paver. Powered-frame widening and transportation rig available.

get yours!

Bring yourself up to date on the industry's most complete and modern line. Mail coupon for these new, informative bulletins.

CHAIN BELT COMPANY
4664 West Greenfield Ave., Milwaukee 1, Wis.
Please forward literature which I have checked:
☐ Rex Finishers ☐ Rex Float Finishers ☐ Rex Automatic Curing Machines ☐ Rex Subgrade Planers and Testers ☐ Rex Pavers ☐ Rex Truck Mixers ☐ Rex Pumps ☐ Rex Railporter ☐ Rex Pumpcrete ☐ Rex Road and Airport Forms

Name.....
Title.....
Company.....
Address.....
City.....*Zone*.....*State*.....

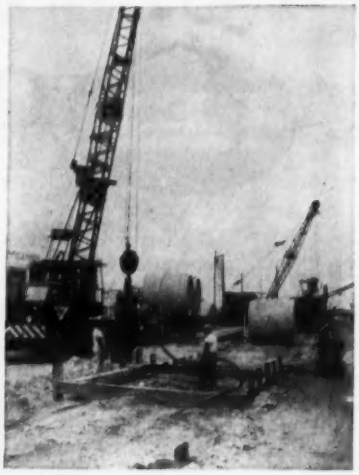
TRENCH BRACING . . . continued from page 111

arrangement, and a well-trained crew. Basically, the operation consists of driving two lines of sheet piles ahead of the trench, excavating between, laying pipe, advancing the bracing frame, and backfilling.

Union's equipment spread is spearheaded by a Lima truck crane that drives the two lines of sheet piles 5 ft apart and 20 ft deep. It swings a Vulcan No. 7 hammer. To keep sheets in line, they are driven against a timber templet, moved ahead by the crane.

Several hundred feet behind the pile driver, a Lima 802 backhoe excavates between the two lines of sheet piles. Lengths of pipe are laid as soon as sufficient working area is available in the trench.

Heavy 8-ft lengths of pipe are swung into the trench by a Lima 703 crawler crane. But instead of the conventional hairpin hook, most Florida contractors employ a steel lifting bar at the top center of the pipe. Suspended from a crane, the bar first is inserted through a hole in the wall of the pipe. A worker inside the pipe threads a pin into a slot at the end of the bar; then the crane lifts the pipe and lowers it into the trench. With the pin arrangement, the pipe hangs in a perfect horizontal position, making it easy to join it to the adjacent pipe. The bar also is much lighter and easier to handle than a hairpin. When the joint is made, another worker removes the pin and the lifting bar is extracted. The hole in the wall of the pipe is made by the manufacturer.



TEMPLET guides driving of two lines of sheet piles in advance of excavation.

To pull the section tight against the adjoining pipe, a conventional come-a-long device is set up inside the pipe.

Union has the job organized so that as little pipe is exposed as possible. A clamshell follows about 150 ft behind the pipe layer to backfill the trench and leapfrog the two steel frames that brace the lines of sheet piles. As the pipeline advances, the clamshell pulls out the last frame, and leapfrogs it ahead.

Sheet piles are extracted later and reused.

In extremely wet areas, the contractor sinks a line of wellpoints on each side of the trench. Normal seepage is allowed to run back through the pipe and is removed at a sump by a pair of 18-in. propeller-type pumps.

Stephen Rafe is superintendent for Union Building and Construction Co.

Construction Equipment Works Better Longer With . . .

BHEW **Custom-Built**

HYDRAULIC CYLINDERS

1. Cylinder barrel and non-adjustable gland welded into one piece, eliminates joint, makes small O.D. in large single and double-acting hoist cylinder.

2. Accurately honed barrel.

3. Hard chrome-plated rod.

4. Flow regulating or pilot operative check valve in base, when required.

Compactness! Efficiency! Close Tolerances! Outstanding operational performance! You get them all in BHEW cylinders. They require minimum mounting space. There is no tooling charge for BHEW cylinders, built to meet *your* specifications and delivered on schedule.

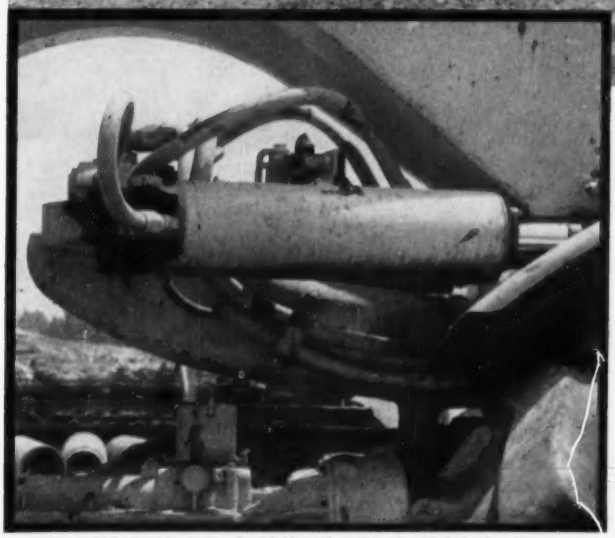
BHEW cylinders are available in standard and special O.E.M. designs . . . single or double acting and telescopic; 1½" to 8" bore; strokes up to 156"; oil hydraulic service in 1,500 psi or 3,000 psi working pressure, pneumatic up to 150 psi; cut-type, ring-type or O-ring construction; choice of mounting.

Send us specifications of your requirements, for full information.

Do you have problems involving cylinders? Our extensive engineering service is available to you without charge.

BHEW **BENTON HARBOR ENGINEERING WORKS, INC.**
622 Langley Avenue, St. Joseph, Michigan

"We Depend on Aeroquip Hose Lines for Replacement . . . They Have Never Failed on the Job"



Aeroquip 1509 Double Wire Braid Hose handles the high hydraulic pressures required by this Euclid S-12 Scraper. Aeroquip 1503 and 1502 Hose Lines are used to carry oil from reservoir to torque converter, and for fuel lines, from filter to transfer pumps.

Says Theodore Temple, Equipment Superintendent, C. C. Mangum, Inc., Raleigh, North Carolina

Like many construction companies, C. C. Mangum, Inc., has standardized on Aeroquip Hose Lines to help keep heavy duty earthmoving equipment on the job.

"We depend on Aeroquip," says Equipment Superintendent Temple, "because it stands up under severe vibration and all kinds of weather. We have never had any downtime due to failure of an Aeroquip Hose."

Aeroquip simplifies replacement problems, too. Because the fittings are reusable, hose lines can be made in minutes, right in the field, if necessary. Only ordinary hand tools are needed. For full information on tough, long-lasting Aeroquip Hose Lines, call the Aeroquip Distributor listed in your Yellow Page Directory, or write us.

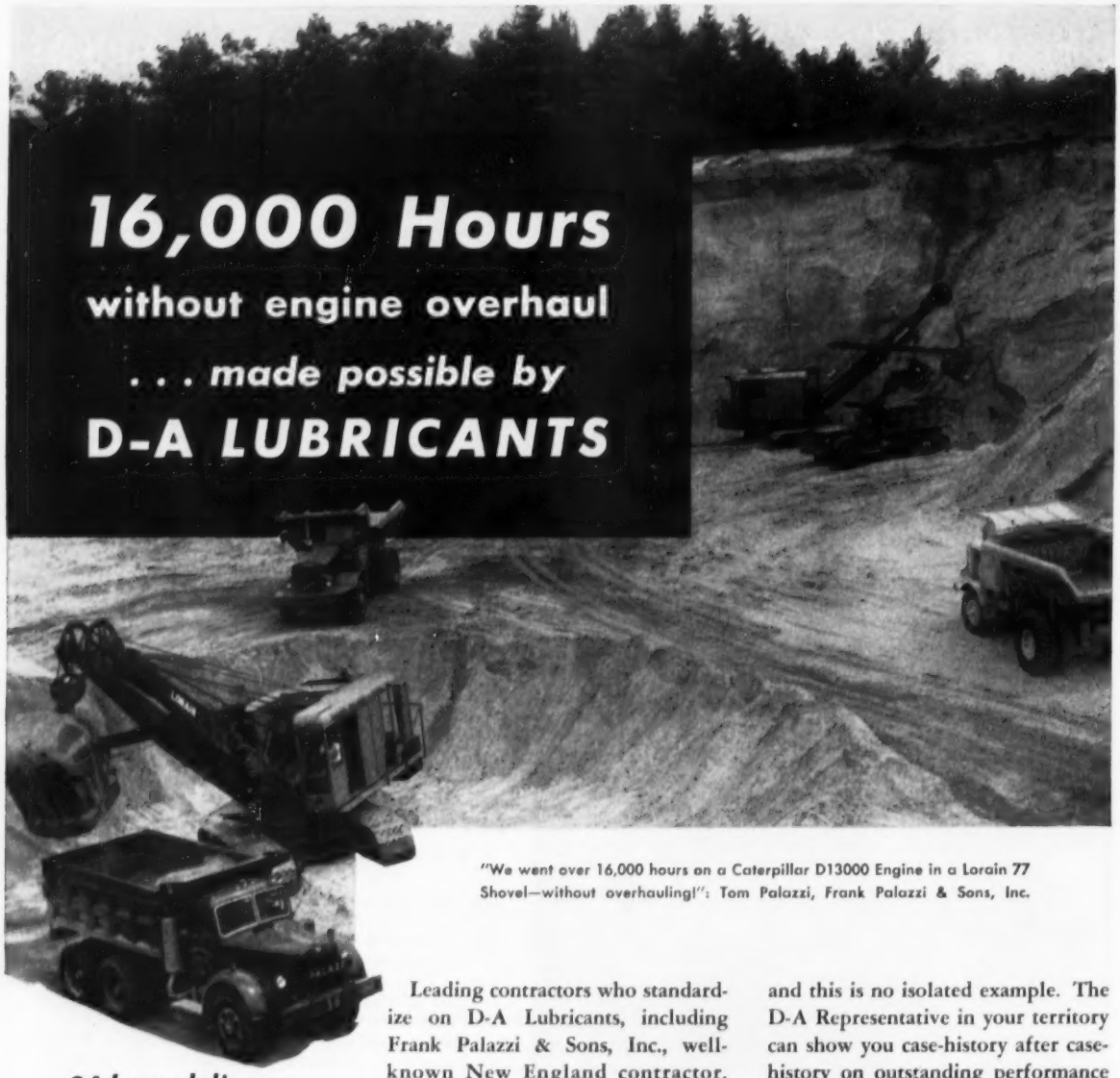
Aeroquip

REG. TRADEMARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

IN CANADA: AEROQUIP (CANADA) LTD., TORONTO 10, ONTARIO

LOCAL REPRESENTATIVES IN PRINCIPAL CITIES IN U.S.A. AND ABROAD • AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD



"We went over 16,000 hours on a Caterpillar D13000 Engine in a Lorain 77 Shovel—without overhauling!": Tom Palazzi, Frank Palazzi & Sons, Inc.

Leading contractors who standardize on D-A Lubricants, including Frank Palazzi & Sons, Inc., well-known New England contractor, expect—and consistently get—8,000, 10,000, 12,000 and even 16,000 hours of heavy-duty service from their engines between overhauls.

Frank Palazzi & Sons recently clocked more than 16,000 hours on a diesel engine without overhaul . . . and this is no isolated example. The D-A Representative in your territory can show you case-history after case-history on outstanding performance and long engine life resulting from the use of D-A Lubricants. Many of these reports may well be from contractors whom you know personally in your own area.

Ask your D-A Representative to show you the actual performance records . . . records you yourself can verify, if you wish.

24-hour delivery anywhere in the U.S.A.

D-A makes equipment last longer.

D-A LUBRICANT COMPANY, INC. • Indianapolis 23, Indiana

From Start Supported on mats, huge Manitowoc 4500 with 150-ft boom scoops 5 yd of decayed organic material from runway area.

To Finish Concrete taxiways connect three big hangars which serve Navy, Air Force, and Air National Guard reserve units jointly.

It's Tough to Build in a Swamp

HOW DO YOU BUILD a pair of long runways in the heart of a cypress swamp?

That's the problem a joint-venture contractor faced at Alvin Callender Air Base, south of New Orleans in the Mississippi River delta. The project covered 3,000 acres of swampy and heavily wooded terrain ranging from a few feet below to a few feet above sea level. And most of the ground was too soft to support heavy equipment.

Blythe Bros., Inc., and Morrison-Knudsen Co., Inc., had two successive contracts with the Navy's Civil Engineer Corps. The first was a $5 million contract calling for a runway-taxiway system to be built almost entirely in a swamp. The second contract totaled $3½ million. It included a similar system, but ground conditions were better.

Both runways are 200 ft wide and consist of a center section of bituminous concrete with two end strips of portland-cement concrete. The first runway is 8,000 ft long, including 1,000-ft end strips and the second runway is 6,000 ft long with 500-ft end strips.

Poor Ground

The first runway required many progressive operations. After trenches were cut to aid drainage, muck was stripped by draglines. Underlying clay was then covered

continued on page 120

Before you buy any giant-sized
Measure TD-24 giant-sized

With full-time "live" power on both tracks, the TD-24 almost builds the road itself—hugging the mountain slope, giving added *operating ease, safety, and capacity!* That's another bonus from exclusive time-proven Planet-Power steering.

When you're 'dozing through rock and other materials, instant fingertip Hi-Lo shifting is a big cycle-speeder. And it cuts operator effort way down!

Try holding a 19-ton load on the blade with any other crawler this big—making a turn as this TD-24 is doing with both tracks pulling, while stockpiling coal with a special wing-type blade. The TD-24's operator can make "round-house," feathered, or pivot turns—with fingertip ease!

tractor advantages!

When you buy a big crawler look beyond sheer size and weight. You may be paying for enough extra "iron" to cause a startling jump in fuel and upkeep costs. So compare. Weigh bigness against provable working and earning capacity! Measure these giant-sized TD-24 advantages that have proven out over 8 years of on-the-job success!

Eliminates "dead-track drag!"

Does the giant you're considering steer with full-time "live" power and "live" traction on both tracks? TD-24 users by the thousands have proved that any crawler *this big* is obsolete without exclusive, time-proved Planet-Power steering advantages!

Planet Power steering eliminates power-wasting, load-limiting "dead-track drag." Upgrade, downgrade, or on the level, you can smoothly turn a heavily-loaded TD-24—under positive control!

Does the big one you're looking at give cycle-speeding on-the-go shifting? The TD-24 does! And the exclusive two-speed planetary system teamed with a 4 speed synchromesh transmission —gives instant, stall-preventing and time-gaining Hi-Lo shifting, *without declutching.*

Does that big one you need have the genuine in-seat, seconds-fast, all-weather International gasoline conversion starting? Or the operating ease, power-transfer efficiency, and service-simplicity of the International Cerametallic-faced engine clutch? Or 8 practical speeds *forward and reverse?* Only the TD-24 has all these, plus dozens of other giant-sized advantages!

Prove to yourself the TD-24 beats all other giant-sized power—for *performance value*—for *big-scale ability to make you big money.* Ask your International Construction Equipment Distributor for a demonstration of a Gear-Drive or Torque-Converter TD-24!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Heap-loading the sideboarded International "75" Payscraper in less than a minute proves the economy and efficiency of the TD-24 as a "pusher."

DOUBLE PUSHING by Tournatractors quickly loads C Tournapull at sand stockpile. More than 2,000,000 yd of sand fill was pumped by dredge from sand bars in Mississippi River. Method was big saving over truck hauling, planned originally.

with a thick sand blanket, and a surcharge added on top to accelerate settlement. Above the compacted fill was placed an 18-in. oyster-shell base, a 6-in. bituminous-treated base, and two layers of hot-mix.

But the first big operation was removing about 440,000 yd of decayed organic material from the runway area. This muck varied from one to 6 ft thick along a strip 10,000 ft long and 300 ft wide.

It was strictly a dragline operation. Supported on mats, Manitowoc 4500 and 3500 draglines scooped the muck and cast it to one side. Because the strip was so wide, most of the muck had to be rehandled by cranes to move it beyond the limits of the runway. Even then the ground was too soft to permit trucks to haul away the spoil, so it was allowed to dry and dressed later by dozers.

Dredge Fill

While the long stripping operation was under way, the contractors built huge stockpiles of sand fill on a 100-acre site near the job. And here's where ingenuity really paid off. Originally, they figured to truck sand from a source 40 mi away. But further investigations revealed several excellent sand bars in the Mississippi River not far from the job.

SCRAPER spreads sand at edge of fill. Thick blanket is laid over clay foundation. Dozer with U-blade pushes fill forward. Surcharge of sand accelerates settlement.

To move the millions of yards of sand to the job, the contractors secured the services of the 27-in. dredge, Mobile, operated by the Atlantic, Gulf, and Pacific Dredging Co. Equipped with a 2-mi discharge line, the 3500-hp dredge pumped more than 1,500,000 yd for the first runway and 750,000 yd for the second. Nearly 100 acres of land was reserved for building stockpiles and settling basins.

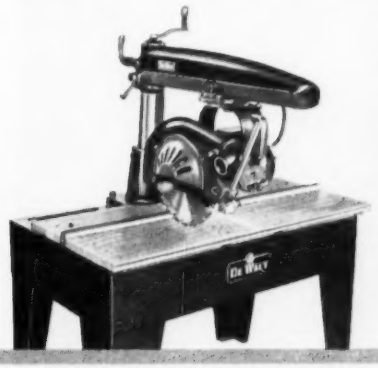
When muck stripping was completed on the first runway, the contractors turned to the tough job of moving sand fill from the stockpiles to the site. The average one-way haul distance was 6,000 ft.

Successive spreading of loads pushed the sand blanket across the swamp. A subcontractor on the first runway moved the sand with a combination of small dump trucks, bottom-dump wagons and rubber-tired scrapers. But scrapers proved far superior in both the soft muck and sand fill. On the second runway, Blythe-M-K moved all the sand with a fleet of eight Model C Tournapulls. Hydroflated tires provided excellent traction in the difficult material.

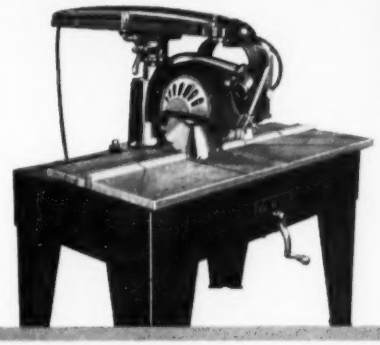
Push Loading

At the stockpiles, scrapers were push-loaded with Cat D8 dozers

Model GA — for medium-heavy-duty work. 2, 3, or 5 hp motor, 12" or 14" saw blade cuts 4½" deep, 24" x 1" wide, rips 34¾" wide.



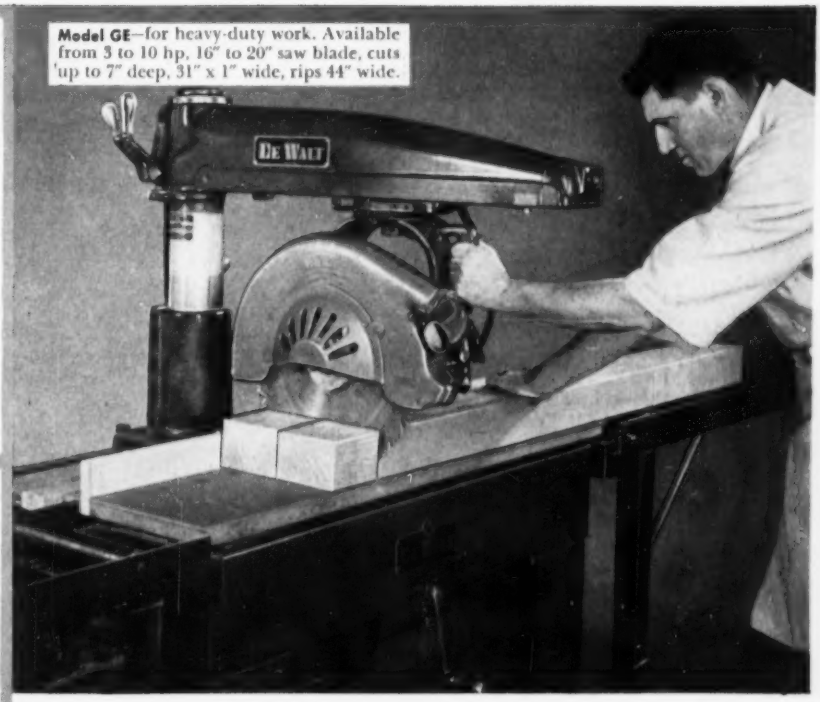
Model R2 — for medium-duty work — with retractable arm. 2, 3, or 5 hp motor, 12" or 14" saw blade, cuts 4½" deep, 20" x 1" wide, rips 36½" wide.



Model GW — for builders, schools and small shops, with handles for portable use. 1½ hp motor, 10" saw blade, cuts 3" deep, 16" x 1" wide, rips 26" wide.

Also a 9" Model MB Home Power Shop, plus a complete line of De Walt accessories, including magnetic brake for all models, safety power rip feed, power cross feed, Spir'Ator Safety Return, as well as a variety of interchangeable saw parts to meet unusual requirements.

Model GE—for heavy-duty work. Available from 3 to 10 hp, 16" to 20" saw blade, cuts up to 7" deep, 31" x 1" wide, rips 44" wide.



Contractors everywhere depend on

AMF DeWalt Power Saws

for all their cutting jobs

Cuts capital equipment costs 60% or more! One AMF De Walt® power saw does the work of *many* single-purpose machines . . . quickly converts to any of 12 basic power tools. It does all *regular* woodcutting, *mass-production* cutting, and keeps *special* jobs *in the shop*. A De Walt ends the need for money-wasting equipment that often stands idle . . . saves 75% in floor space alone, since it can be set and used against a wall!

Cuts work-time costs! AMF De Walt saves up to 90% in layout and marking time . . . gives safer, easier, faster *top-side* cutting . . . material always moves in a straight line on a level table for maximum safety and modern production efficiency. Operators everywhere like its safer, easier handling.

Cuts finished product costs! Users by the *hundreds of thousands* have *proved* AMF De Walt produces *finer* work, *faster* . . . at *far less over-all cost* than the equipment it replaces.

And there's an AMF De Walt for every cutting need—for construction, maintenance and repair, shipping departments, pattern shops, production lines, lumber yards, planing mills—wherever wood, metals, plastics and compositions are cut.

Compare an AFM De Walt and its money-saving advantages with your present equipment. And you'll buy De Walt for your next job. See your dealer for a demonstration, or write department CM-703 for Free Illustrated Booklet, JOB-TESTED METHODS FOR CUTTING COSTS.

Another AMF Product
DE WALT POWER TOOLS

DeWALT Inc.
Lancaster, Pa.
Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY

RUNWAY IN SWAMP
continued

or Tournatractors, doubled up for maximum thrust. Dumped material was spread at the edge of the fill by a D8 with a U-blade. On a roundtrip cycle of 11,000 ft, the fleet of eight scrapers moved as much as 5,700 yd in a 10-hr day.

Test loadings showed that 70% of settlement would occur during construction, which meant that post-construction settling would be more than acceptable. To accelerate complete settlement before paving, a progressive surcharge was employed.

Sand Blanket

At the beginning of the fill, the first 2,000 ft was covered with a blanket of 200,000 yd of sand ranging from 1½ to 8 ft thick. Specifications required that the surcharge be left in place 60 days, unless the engineers felt that final settlement was achieved ahead of time. Often the surcharge could be moved ahead in half the specified time. Actually, after the first section settled, the surcharge was advanced in a continuous operation. Scrapers loaded sand at the rear end of the surcharge and moved it forward. When the end of the fill was finally reached, the 200,000-yd surcharge had been reused about five times and had diminished to only 70,000 yd. Settlement varied from 6 in. to 1 ft.

On the second runway, ground was somewhat better. Surcharges were spotted where required, and there was no waste.

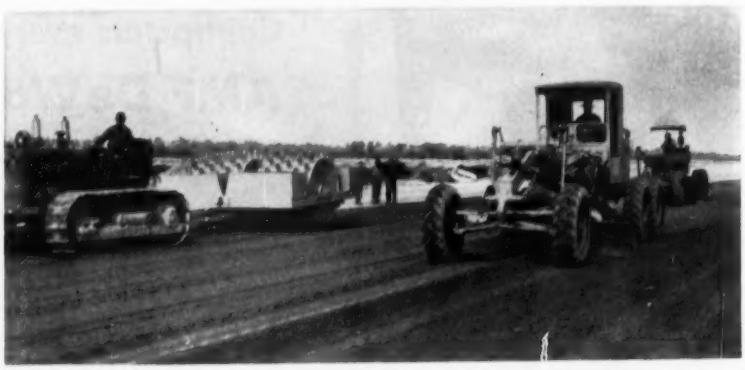
Above the compacted fill, the contractor placed 18-in. of oyster-shell material trucked from barges. Wobble-wheel rubber-tired rollers compacted the base at optimum moisture. And on the top lift, the shell was left 2 or 3 in. high to hold moisture during compacting. Just before paving, it was shaved off by graders, leaving a smooth, hard finish to receive pavement.

Personnel

Representing Blythe Brothers & Morrison-Knudsen was W. J. Stribling, project manager, J. T. Christman, general superintendent, F. Robertson, project engineer, and J. B. McCoy, office manager.

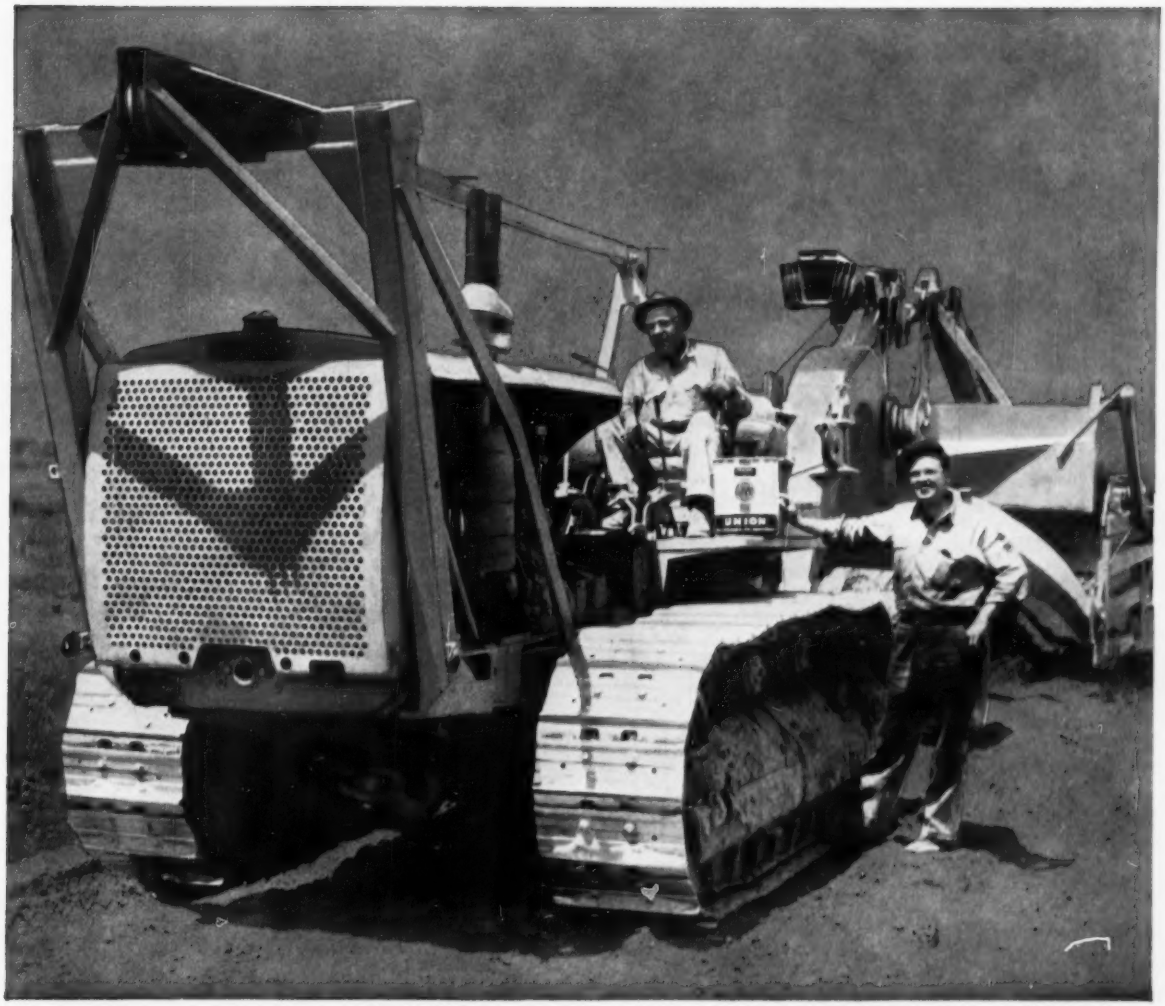
Construction of the Joint Air Reserve Training Center was under the jurisdiction of Captain Jule C. Tate, CEC, USN. Resident officer in charge of construction was Commander E. B. Hickey, CEC, USNR.

OYSTER SHELLS for 18-in. runway base are unloaded from barges and dumped by clamshell into truck-loading hopper. Dredged shells are often used as fill in New Orleans area.



SHEEPSFOOT ROLLER compacts sand-shell base while graders level surface. Placed in three lifts, base is left high to retain moisture. Later, graders shave it to grade.

TWIN PAVERS place concrete for 1,000-ft end strips of 8,000-ft runway. Center section of runway consists of two layers of bituminous concrete on a 6-in. course of base.



Jesse Franco and Johnnie Palmer, Franco & Palmer, contractors, Dinuba, California

"T5X ...keeps our 'Cats' operating around the clock"

"T5X Motor Oil keeps our D8 'Cats' operating around the clock on jobs that we consider most abusive to engines and equipment.

"The loading of our 18-yard carryalls really puts an engine through its paces, from slow idle to maximum power within seconds. Usually after levelling we subsoil to a depth of 36", and in certain areas here in the Alta District the hardpan requires two D8's both operating at peak output. The strain on these units is terrific but T5X has never failed to keep our equipment rolling.

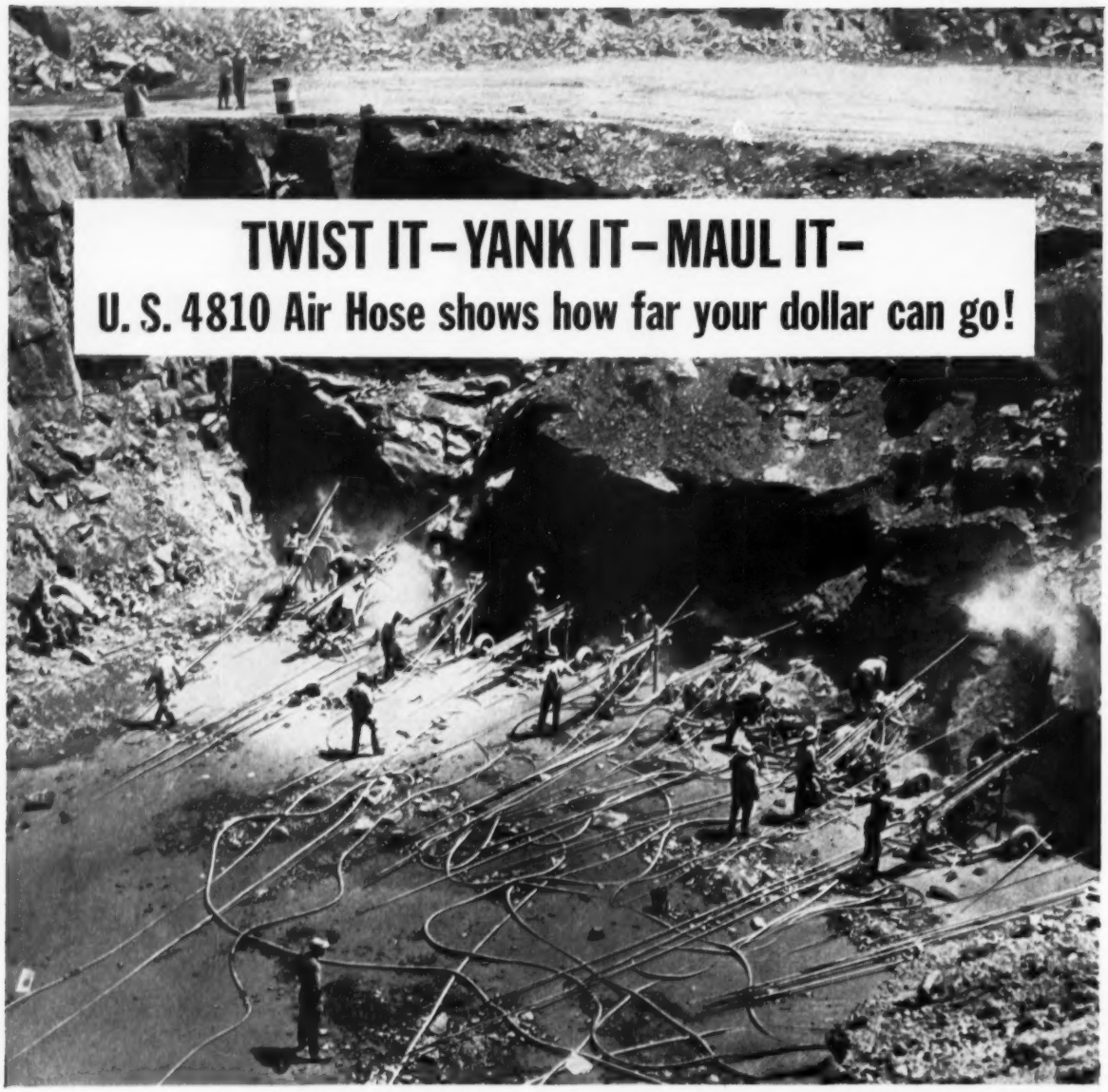
"We have been using T5X and other Union Oil products for more than 10 years now, and we highly recommend them to every contractor facing the really tough jobs."

Everywhere in the country the story is the same. Contractors with the tough jobs know they can rely on T5X Motor Oil. If you haven't yet tried this *amazing* purple motor oil in your equipment we suggest you call your nearby Union Oil representative for immediate delivery.

UNION OIL COMPANY 76
OF CALIFORNIA

Los Angeles: *Union Oil Bldg.* • ***New York:*** *45 Rockefeller Plaza* • ***Chicago:*** *1612 Bankers Bldg.* • ***Philadelphia:*** *Eastwick Ave. & Edgewood St.*
Dallas: *313 Fidelity Union Life Bldg.* • ***Kansas City, Mo.:*** *612 W. 47th St.* • ***New Orleans:*** *644 Nat'l Bank of Commerce Bldg.* • ***Boston:*** *214 Harvard Ave.*

AIR HOSE



TWIST IT–YANK IT–MAUL IT–

U. S. 4810 Air Hose shows how far your dollar can go!

This is the hose recommended for all pneumatic tools and air drills—for use wherever high working pressures, abrasion and general abuse would wreck an ordinary air hose.

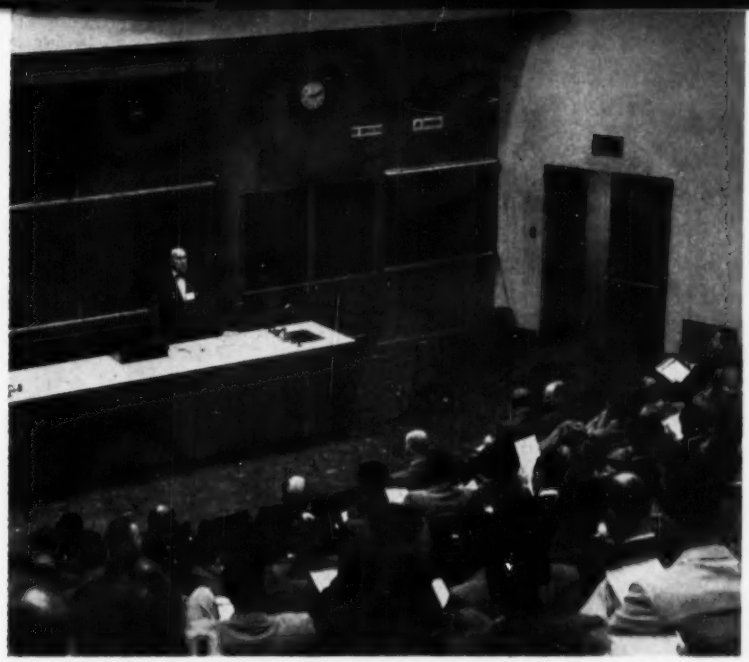
Heavy tools can drop on it. Pieces of rock from blasting can strike it. It can be pulled over jagged stones, grinding gravel—in all kinds of weather. *Throughout all this, U. S. 4810 stays unharmed, delivers full service.*

U.S. 4810 combines super adhesion and extreme flexibility. The rugged service that this hose provides throughout its long life proves that you are wasting dollars if cheaply constructed, short-lived air hose is being used instead of U. S. 4810 Air Hose.

A complete line of hose is obtainable at any of the 28 "U. S." District Sales Offices, at selected distributors, or by contacting us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

Mechanical Goods Division

United States Rubber



PAUL F. KEIM, professor of civil engineering at the University of California, addresses engineers and contractors attending university's forum on construction problems.

Train the Unskilled, Speakers Tell Forum

CONTRACTORS will continue to pay premium prices for money they borrow to finance their operations, a leading West Coast banker told 240 contractors and engineers attending the University of California's second annual Construction Conference.

Earl V. Taylor, vice president of San Francisco's Crocker-Anglo National Bank, told the group that money borrowed by contractors to finance their operation is not considered a "preferred loan" by most banks. Contractors are not preferred bank customers, he said, because of the fluctuating nature of the industry and because contractors seldom maintain large bank balances. The situation has worsened recently because money available for loans has become harder to locate. Taylor predicted that money costs for contractors would continue at the present high level.

The banker was the only speaker who could not anticipate reduced construction costs. Other speakers, discussing a wide range of topics including labor, materials and equipment, techniques, and management, talked about ways to stretch the contractor's dollar.

The single most discussed subject at the conference of outstanding construction authorities was the cost of labor, estimated to be 50% of his total costs by one West Coast contractor. The contractor, George Pollock of the George Pollock Construction Co., Sacramento, Calif, urged top management of contractor firms to "interest themselves" more in labor negotiations.

Hourly wage rates, travel and subsistence pay, and fringe benefits such as vacation pay and health and welfare plans become "fixed costs" when negotiations are completed, he said. Construction firms can better control these costs when top management takes an active part in dealings with unions.

Pollack said other fixed costs associated with labor can be reduced through effective management. As examples, he pointed out that unemployment insurance and workmen's compensation premiums are based on experience ratings. Insurance premiums can be reduced if the contractor makes an effort to reduce accidents. The best way to reduce these costs is to make top management more effective, Pollack said.

The keynote speaker at the conference, Lillian Gilbreth, New York City industrial consultant, told contractors that they can benefit by "upgrading" unskilled workers through training programs. She discussed the technological changes in the construction industry in the past few years and reminded contractors that the value of the unskilled worker is shrinking rapidly.

Lamar Childers, business representative of the Alameda County, Calif., Building Trades Council, also emphasized the value of employee training. He said that unions generally are anxious to supply training through their apprenticeship programs, but he said the main burden for training workers remains with the contractor.

Childers also urged contractors to "let workmen know why they are asked to do a job a certain way." He noted that the industry is going through a period of technological advancement, and he cautioned that unnecessary friction sometimes arises when "workers come up against unexplained changes" in their jobs. Engineers and contractors have too little patience with their help, especially older men who have "a traditional resistance to change," he said.

"Give a workman a sense of accomplishment by telling him the reasons his job is changing, and he will be willing to cooperate," Childers said.

Douglas Baker, project manager on Monticello Dam for the Peter Kiewit-Parrish Bros. joint venture, also suggested that costs could be reduced by "the more effective use of people," especially those on a supervisory level. This can best be done, he said, through proper organization of a contractor's forces to handle a specific job.

The time to organize, Baker said, is while the job is still in the bid stage so that the organization can be "perfected and polished" before work starts. He said the contractor's organization should be studied frequently throughout the life of the job, and he suggested that winter-shut-downs provide an opportunity to review the strength of the supervisory set-up. On a big project, he suggested that after the job is running smoothly the contractor will benefit by rotating superintendents and foreman in various tasks. The experience gained in this manner will benefit the contractor on future jobs.

According to R. L. Dowrick, assistant purchasing manager for

Upsetting Bethlehem tie-rods, for new Port of New York Authority Pier II in Brooklyn. General Contractor: Fehlhaber Corporation.

Making 87-ft Tie-Rods for New Pier on Brooklyn Waterfront

To improve the facilities of New York harbor for loading and unloading vessels, The Port of New York Authority is currently supervising the construction of a 2130-ft bulkhead for a new Pier II at the Brooklyn-Port Authority Piers. The project will use approximately 500 Bethlehem tie-rods.

About 400 of these rods are 87 ft, 10 in. long and 3⅞ in. in diameter, upset to 4½ in. at each end. The remainder are 20 ft, 2 in. long and 2 in. in diameter, upset to 2½ in. at each end. They are made of structural steel, to ASTM Specification A7-55T.

Wherever tie-rods are called for, you can count on Bethlehem meeting your needs. Bethlehem tie-rods, with cut threads or rolled threads, come in all lengths. Cut-thread rods are furnished plain or upset, in diameters through 4½ in. Rolled-thread rods are made in diameters through 1½ in. Both types can be ordered straight or bent, in single or multiple units, either asphaltum-dipped or hot-dip galvanized.

If you are planning a construction project that will call for tie-rods, we would be glad to talk over your requirements with you. Just call or write the nearest Bethlehem office.

HAVE YOU SEEN "HOLDING POWER"?

Our 16-mm motion picture "Holding Power" tells an interesting story of the manufacture and use of fasteners. Runs 25 minutes. With sound and color. To borrow a print, just write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Sherman Equipment "On-the-Job" While Other Machines Stand Idle

The Contractor: The Webster Company, St. Paul, Minn.

The Job: Install an automatic lawn sprinkler system for a new school.

The Problem: Heavy rains which threatened to prevent completion of the job on schedule. Trenching machines clogged up and track-type dozers tore up the rough graded area.

The Solution: A lightweight Sherman back-hoe for the trenching with the ability to push itself along the ground with its dipstick. For backfilling and backgrading, the Sherman AJ 25 Loader on the dependable Fordson Major Tractor is used. Because of its mounting and leverage design, it transfers more weight to the big driving wheels of the tractor with resulting traction advantage. Easy steering is assured by the Sherman Power Steering unit.

Actually, the Webster Company has found its Sherman equipment profitable even on a rental basis where operators can be expected to give a rig all the abuse it will stand. Rugged, heavy-duty construction is a prominent feature of all Sherman Power Diggers, Loaders, Fork Lifts and other equipment. See them in action soon at your local Ford Tractor Dealer or write for Bulletin No. 860.

*Manufactured for Sherman Products, Inc., by Johnson Hydraulic Equipment Company, Minneapolis, Minnesota

†Designed, Engineered and Manufactured jointly by Sherman Products, Inc., Royal Oak, Michigan. Wain-Roy Corporation, Hubbardston, Mass.

©1956 Sherman Products, Inc.

SHERMAN MAJOR DIGGER-LOADER COMBINATION performs a great many different jobs for the city of Dearborn, Michigan. The unit is used to dig water main taps and sewer sections, to install fire hydrants, to load and backfill and to do many miscellaneous jobs.

Sherman

PRODUCTS, INC.

ROYAL OAK, MICHIGAN

POWER DIGGERS† • FRONT END LOADERS* • FORK LIFTS

Sherman GP Products

Speakers at California Forum . . .

Douglas Baker
Use people effectively

R. L. Dowrick
Buy more carefully

W. A. Abrahamson
Know your equipment

Grant Gordon
Eliminate ambiguities

Lamar Childers
Unions will cooperate

Earl V. Taylor
Money stays expensive

Paul J. Stafford
Don't start job early

George Pollock
Negotiate fixed costs

CONSTRUCTION CONFERENCE
continued

Bechtel Corp., many contractors are losing money because of ineffectual purchasing techniques. Because job schedules depend on having the right equipment or materials at the right place at the right time, he urged contractors to use better judgment when picking their suppliers. Only through a careful screening of suppliers can the contractor be reasonably assured that deliveries will be made on schedule, he said. Dowrick also suggested that front office management can reduce costs by maintaining a closer inventory control over stock on hand.

Paul J. Stafford, chief estimator of Kaiser Engineers, warned contractors that they often start jobs too soon after the bid is accepted. He said a contractor is throwing money away when he starts his job before he is assured of having men, equipment, and materials on hand. To start a job without one or more of these necessities, "only adds to the job overhead."

It is of prime importance that the contractor knows just how much it is costing him to operate his equipment, according to W. A. Abrahamson, Morrison - Knudsen district engineer. He cited a recent survey to show that only five out of 50 contractors keep accurate records of the cost of owning and operating heavy equipment. The proper knowledge of equipment, he said, "is often a measure of the contractor's ability to survive."

Everybody suffers when badly prepared specifications are forced on the contractor, according to Grant Gordon, assistant general manager of Guy F. Atkinson Co. Poorly written specifications can result only in cost increases that must be passed back to the owner, he said. He deplored the lack of coordination between design and specifications on some jobs, and he pointed out that the addenda to specifications is sometimes larger than the original volume.

The construction conference, held at the Berkeley campus of the University of California, was the second in what is planned as an annual series. It was sponsored jointly by the university, the Construction Div. of the American Society of Civil Engineers, and the Northern California chapter of the Associated General Contractors.

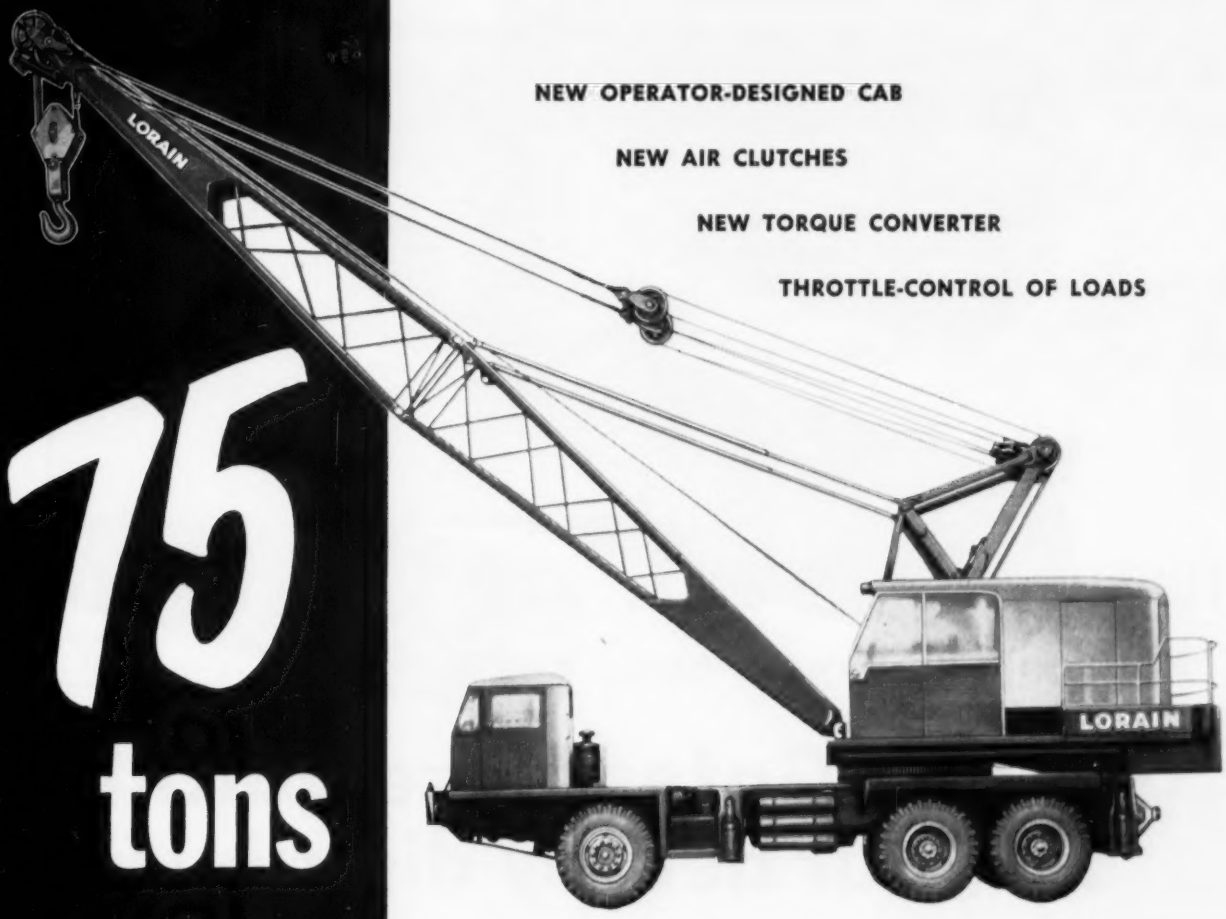
NEW OPERATOR-DESIGNED CAB

NEW AIR CLUTCHES

NEW TORQUE CONVERTER

THROTTLE-CONTROL OF LOADS

75 tons



LORAIN MOTO-CRANE® MODEL MC-875

NEW 2-LEVER "JOY-STICK" AIR CONTROLS

NEW "SHEAR-BALL" TURNTABLE MOUNTING

NEW SQUARE-TUBULAR-CHORD BOOM UP TO 200 FT.

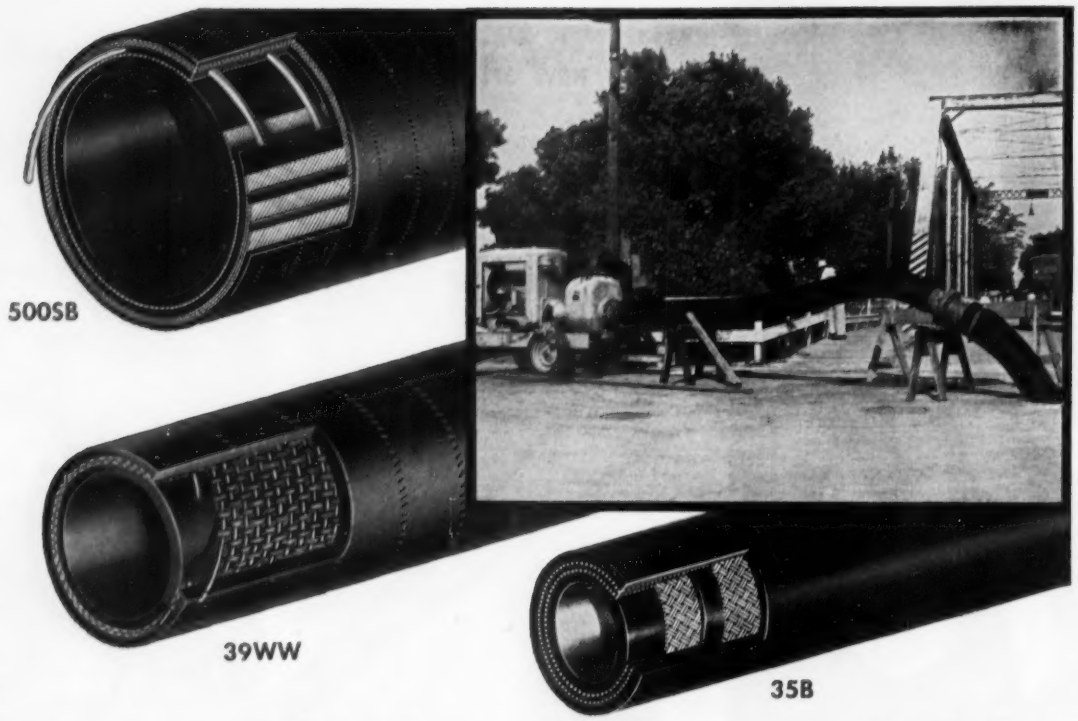
We don't have to label this the world's largest crane on rubber tires. Any crane user knows that no one (including ourselves) has ever before come close to a rubber-tire crane of this enormous lifting capacity.

This newest of a long list of Lorain Moto-Cranes embodies all the years of Thew-Lorain "know-how" from the origin of rubber-tire cranes — by Thew — in 1918. All the design features listed above are incorporated into this *big* crane for *big* crane users — plus a 12-tire Lorain-designed, Lorain-built Moto-Crane carrier, with 10 speeds to 20 m.p.h.

This is one rubber-tire crane that will really handle the *big* jobs. *There is nothing else like it!* See your Thew-Lorain distributor for all the details. Or write direct for the new "MC-875" catalog.

THEW LORAIN®

The Thew Shovel Co.
Lorain, Ohio



Get any Gates Hose quickly from your nearby distributor

There is a distributor of Gates Construction Hoses conveniently located near you. That means you can get *quickly* the *right* hose for any construction job.

Here are three Gates Hoses popular with construction men for their complete dependability and ready availability:

500SB Gates Heavy Duty Water Suction Hose
with maximum crush resistance

Recommended for use on 4", 5" and 6" centrifugal, diaphragm and piston type pumps, this heavy duty hose has rugged spring steel wire and strong fabric reinforcing to make it practically crush-proof. Tube is compounded to handle abrasive fluids such as those encountered in sewer work. Made with inside diameters from 2" to 6".

39WW Gates Water Suction Hose
withstands extremely rough usage

An all-purpose heavy duty suction hose for use on intake side of any pump requiring hose up to 4" inside diameter. (Can also be used for discharge service.) Tough but flexible. Reinforcing wires and cords are interlaced to provide a strong, well-balanced construction.

35B Gates General Purpose Water Hose
for long life in rough service

A superior hose for all types of wet-down service . . . for concrete making . . . for discharge on small pumps. Top quality black rubber cover is built to withstand rough usage and exposure to weather — won't chip or scuff off. Tightly twisted cords provide rugged reinforcement — permit use of high water pressures. Heavy gauge tube compounded for long service . . . Available in long, continuous lengths — ½" through 1½" inside diameters.

GATES Distributors are in the Yellow Pages

Gates Construction Hoses are conveniently available. Consult the yellow pages in your phone book for nearest distributor.

The Mark of Gates *Specialized* Research

The Gates Rubber Co., Denver, Colo.

TPA 163

Gates Construction Hoses

LaCROSSE
SALES AND SERVICE

ALABAMA
Leary & Owens — *Birmingham and Montgomery*

ARIZONA
Western Machinery Co. — *Phoenix*

ARKANSAS
Clark Equip. — *Little Rock*

CALIFORNIA
Smith-Booth-Usher — *Los Angeles*
E. R. Bacon — *San Francisco*

COLORADO
Liberty Truck & Parts — *Denver*
Western Machy. Co. — *Denver*

CONNECTICUT
Friedman Equip. — *Bridgeport*

FLORIDA
M. P. Moody — *Jacksonville*
Llewellyn Machy. — *Miami and Tampa*
Rivers Body Factory — *Orlando and Jacksonville*

IDAHO
Sawtooth Co. — *Boise*

ILLINOIS
D. D. Kennedy — *Bellwood and Rockford*
Fabick — *Marion and Salem*
Capitol Trailer — *Springfield*

INDIANA
Seastrom & Co. — *Indianapolis*

IOWA
Herman Brown — *Des Moines and Cedar Rapids*

KANSAS
White Star Machy. — *Wichita*

KENTUCKY
Whayne Supply — *Ashland, Bowling Green, Louisville and Paducah*

LOUISIANA
General Equip. — *Baton Rouge*

MARYLAND
McClung-Logan — *Baltimore*

MASSACHUSETTS
Sandberg Equip. — *Cambridge*

MICHIGAN
Contractors Machy. — *Detroit and Grand Rapids*
Drott Tractor — *Iron River*

MINNESOTA
W. H. Ziegler — *Minneapolis, Crookston, Duluth, Hibbing and Mankato*

MISSISSIPPI
Dalrymple Equip. Co. — *Amory*

MISSOURI
Ashton-Richards — *Kansas*
Fabick — *St. Louis, Sikeston and Jefferson City*

MONTANA
Western Constr. — *Billings and Great Falls*

NEBRASKA
Anderson Equip. — *Omaha*

NEVADA
R. D. Roeder Equip. and **Sanford Tractor** — *Reno*

NEW JERSEY
Eastcoast — *Mountainside*

NEW MEXICO
R. L. Harrison and **N. C. Ribble** — *Albuquerque*

NEW YORK
Contractors Sales — *Albany*; **MacDougall** — *Binghamton*
Rupp Equip. — *Buffalo and Rochester*
Frantz Tractor Co. — *New York City*
Central New York Equip. — *Syracuse*

NORTH CAROLINA
Mitchell Distr. — *Raleigh, Spruce Pine and Charlotte*

NORTH DAKOTA
Northwestern Equip. — *Fargo and Minot*

OHIO
W. W. Williams — *Cincinnati, Cleveland, Columbus and Maumee*

OKLAHOMA
Wylie-Stewart — *Oklahoma City*
Boardman — *Oklahoma City and Tulsa*
Tulsa Machy. and **R. A. Young & Son Inc.** — *Tulsa*
Turman-Pierce — *Poteau*

PENNSYLVANIA
Frantz Equip. — *Philadelphia*; **A. T. Green** — *Pittsburgh*
Standard Equip. — *Kingston*

SOUTH CAROLINA
South Carolina Equip. — *Columbia*

SOUTH DAKOTA
Foster-Bell — *Sioux Falls*; **West River** — *Rapid City*

TENNESSEE
Dalrymple Equip. Co. — *Memphis*

TEXAS
Conley-Lott-Nichols and **Singleton Equip.** — *Dallas*
Boehck Engr. — *Houston*; **Studer Machy.** — *Austin*

UTAH
Cate Equip. and **Lund Machy.** — *Salt Lake City*
Western Machy. — *Salt Lake City*

VERMONT
Hill-Martin — *Barre*

VIRGINIA
Cary Hall Machy. — *Salem*

WASHINGTON
Hatten Machy. and **Star Machy.** — *Seattle*
Northern Commercial — *Seattle*
American Machine — *Spokane*

WEST VIRGINIA
Richardson Tractor — *Charleston and Clarksburg*

WISCONSIN
Drott Tractor — *Milwaukee, Madison and Rice Lake*

WYOMING
Moss Equip. — *Casper*

CANADA
General Supply — *Montreal, Toronto and Ottawa*
Twin City Ind. Equip. — *Pt. Arthur*
W. H. Marr — *Kenora*; **Vulcan Machy.** — *Winnipeg*
Vancouver Machy. Depot — *Vancouver*
Roy Wright — *Regina*
New Foundland Tractor — *St. Johns, N.F.*

EXPORT
W. C. Bastian — *1136 Natl. Press Bldg., Washington, D.C., Cable: "Bastian"*

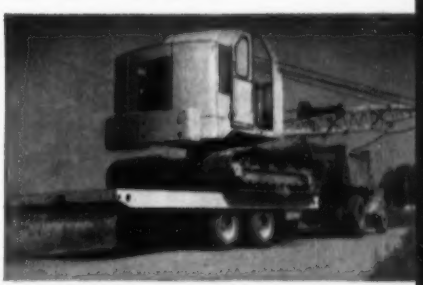
Skid-mounting the primary unit of this big-capacity crushing, screening and loading plant made it possible to "road it" on a LaCrosse low-bed — without violating highway load-restrictions.

How to DOUBLE THE OUTPUT of your men and machines

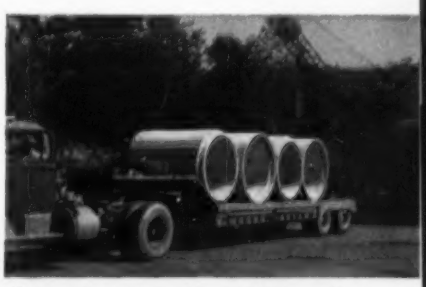
To gain full advantage of today's high-production earthmoving and construction machines, it's important to *get them into action FAST* after each assignment. Waiting 3 or 4 hours for a big crusher or shovel can tie-up dozens of men, trucks, and other equipment that need to be kept busy.

That's why smart contractors everywhere agree that *it pays to have several LaCrosse low-beds in your equipment* fleet, so you can "get your show on the road" in DOUBLE-QUICK TIME. This permits better scheduling of operations . . . often doubles normal output of men and machines. It also reduces costly down-time because you can rush *"crippled rigs"* into repair shops, and get them back on the job with minimum delay.

Most heavy machinery haulers prefer the popular *24-ton* LaCrosse DF6T tandem because it will *haul a greater variety of loads ANYWHERE — without permit complications.* However, LaCrosse builds more than 80 single and multiple-axle low-beds — from 6 to 75 tons capacity — with flat, drop or tilting platforms — *for every hauling need.* Call your nearest LaCrosse distributor, listed here for complete facts and figures. LaCrosse Trailer Corp., LaCrosse, Wis., U.S.A.



Shovels and tractors weighing up to 22 tons can now be moved by inexpensive LaCrosse tilt-trailers and standard trucks. One man can load or unload equipment in 5 minutes, without skids or planking.



When not busy moving machinery, a LaCrosse low-bed comes in handy for hauling and stockpiling culvert pipe, timbers, reinforcing, paving forms and many other supply-items needed to keep jobs on schedule.

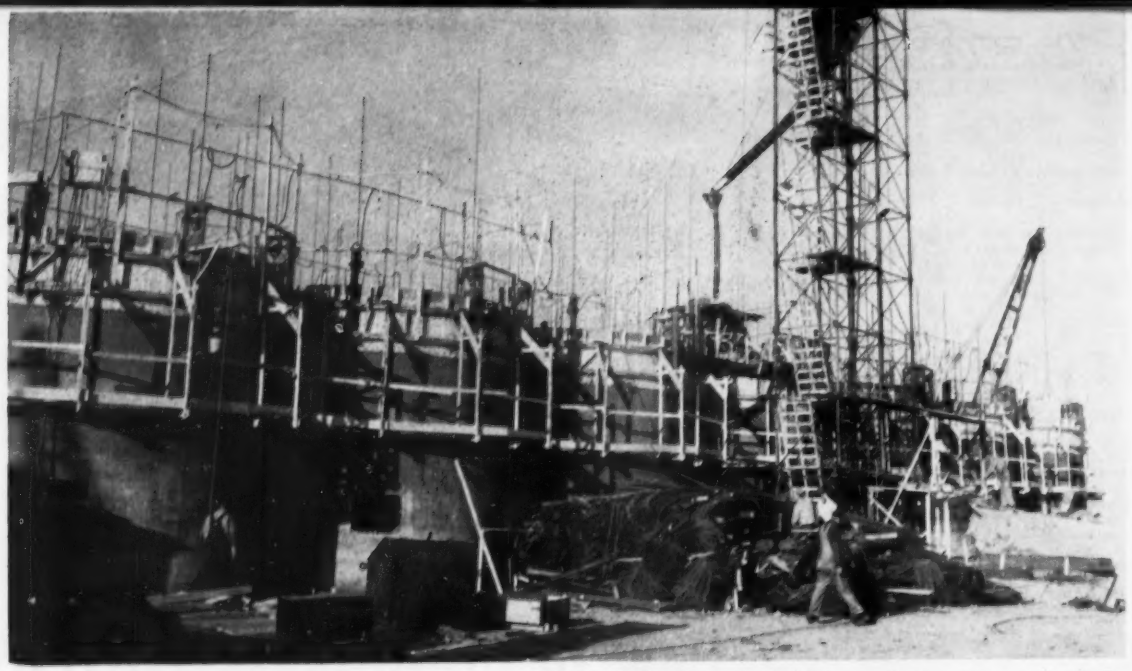
LC-43

Heavy metal fabrication since 1865

MOBILIZE YOUR EQUIPMENT FLEET NOW!

LaCROSSE

VALUE LEADER IN LOW-BED TRAILERS

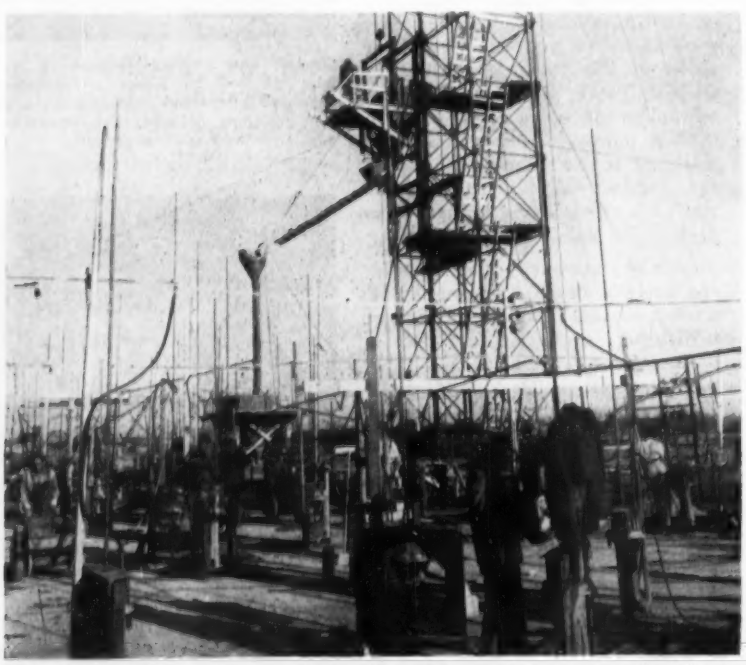


PNEUMATIC JACKS move forms upwards a half-inch at a time during the continuous pour of a large group of concrete storage silos by the slip form method. Job is a grain storage project for the Regional Port Commission operating at Calumet Harbor near Chicago.

Air Jacks Raise Slip Forms

AIR AND WATER are primary reasons for record speed in the slipform erection of 260 concrete grain storage silos at Calumet Harbor, south of Chicago.

Air serves to actuate the congress of pneumatic jacks that lift the yoke-supported slip forms; water is the principal element of a leveling device that makes possible the accurate operation of a large number of jacks.



ELEVATOR TOWER guyed to ground alongside work area raises concrete and reinforcing steel. Concrete drops down elephant trunk to hopper where workmen buggy it away.

James A. Stewart Corp. of Chicago is general contractor for construction of the silos that will be owned and operated by the Regional Port Commission. Responsible, however, for the smooth operation of the lift is Pneumatic Jacks, Inc., of St. Louis, Mo. Pneumatic both supplies equipment and supervises its use.

Built in Groups

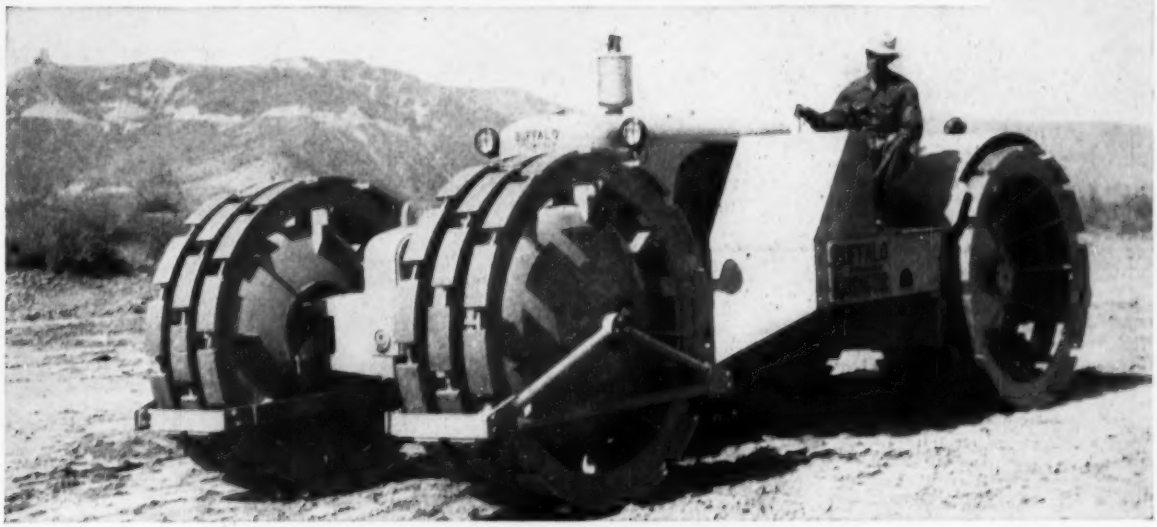
Pneumatic comes into the picture after Stewart has poured the concrete slab foundation on which the silos will sit and fabricated forms for a group of 50 silos. Each silo is 135 ft high, has a 25-ft dia, and a wall 8 in. thick. Forms are made of tongue and grooved 1x8's 4 ft high. Insides of forms are fitted with two continuous timber wales, one of which is placed 6 in. from the top of the form, the other 6 in. from the bottom.

Wales are braced by two lengths of I-beams crossed between wales at quarter points of their circumferences. Beams are braced with 4x4-in. timber studs that also support sheets of plywood. The plywood will serve as a work platform during the lift.

U-shaped jacking yokes next are placed through cut out sections of the work platform to engage the lift forms. Each yoke has two steel

continued on page 136

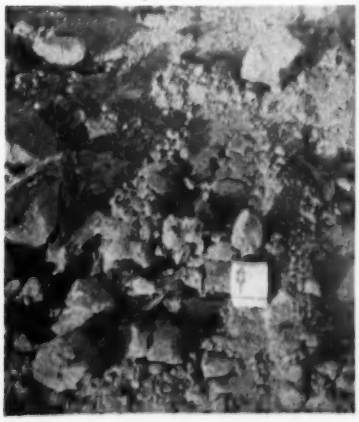
K-45 Kompactor compacts California 399



for Guy F. Atkinson Company on $1,736,000 Ventura-to-Ojai highway construction job

To meet density specifications and *speed* compaction, Guy F. Atkinson Company of South San Francisco, California, uses the Buffalo-Springfield K-45 Kompactor on this project between Ventura and Ojai, California.

Material before compaction on the Ventura-Ojai highway job. (Pack of cigarettes shows comparative size.)



After 3 passes by the K-45 Kompactor. Note surface uniformity. (Cigarette pack for comparison.) Density specifications also have been met in record time.

Operating at *fast* speeds, 4 to 5 mph, the self-propelled, highly maneuverable K-45 cuts compaction time substantially from that normally required. It further shortens time by giving compaction to meet specified densities with *fewer* passes.

The K-45's "Interrupted Pressure Principle" design places heavy steel pads in staggered rows around each of 4 large diameter wheels. *All* compaction effort is directed downward with minimum displacement on entering and leaving the compacted area . . . gives a better finished surface.

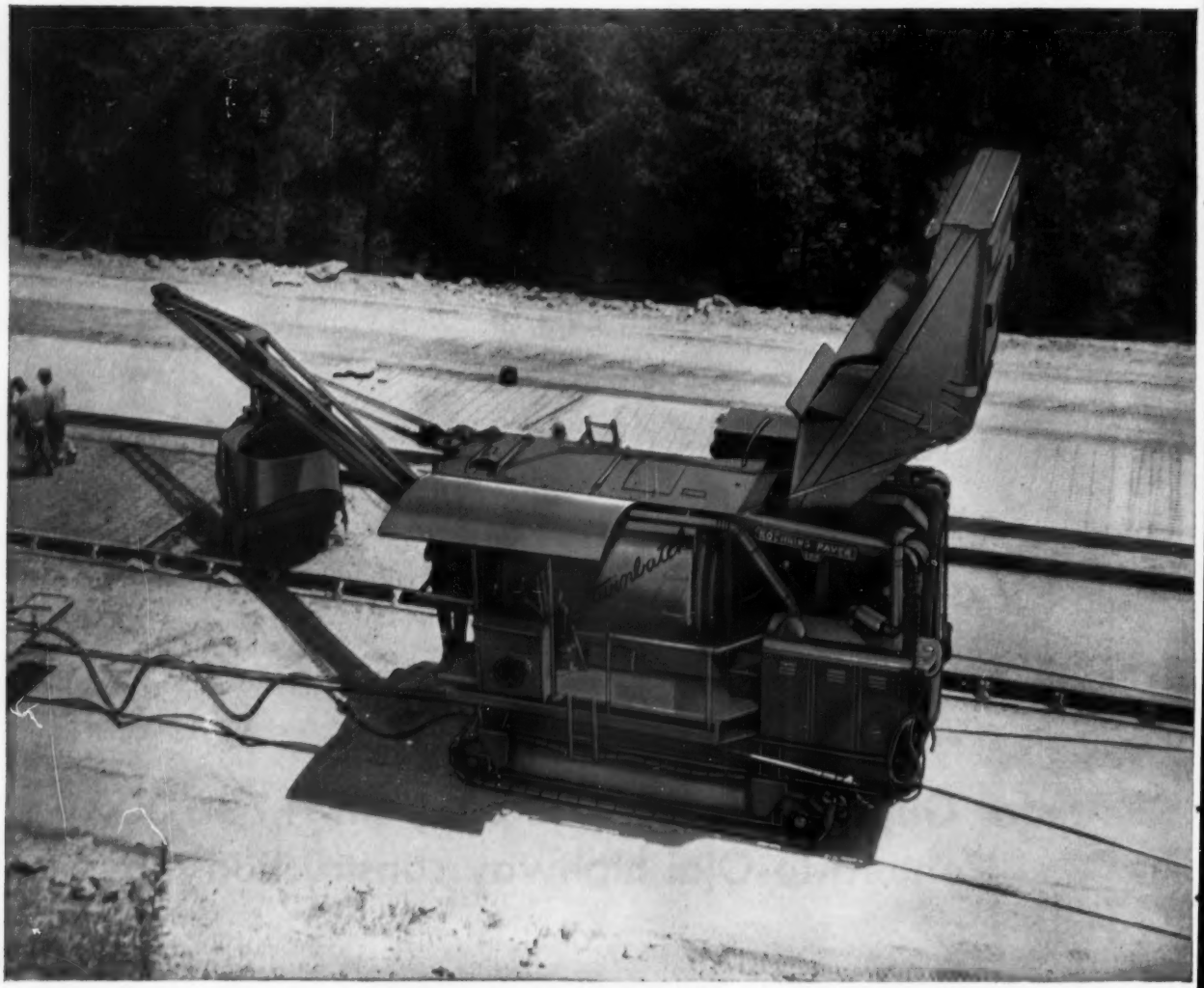
Send now for Bulletin S-64854. See your nearest Buffalo-Springfield distributor for a demonstration on the job.

The Standard of Comparison

BUFFALO-SPRINGFIELD ROLLER COMPANY

Division of Koehring Company

SPRINGFIELD, OHIO



Pouring concrete in strips 12 feet wide on a new expressway, Koehring 34-E *twinbatch* paver averaged 1100 feet per 8-hour day. 10-inch slab consisted of 8-inch mesh-reinforced base, 2-inch top course.

PLAN YOUR SPREAD FOR

the heavy paving program ahead

Long-range outlook on the extensive road program, and new "jet-age" airbases, indicates a steadily-rising curve of construction activity in all areas. It also indicates plenty of paving business ahead for the contractor who is in a position to compete favorably in the bidding, and who can profitably complete contracts *on schedule.*

In planning your equipment spread, you can't afford to gamble on the production end of your job — *at the paver,* where every second counts. That's where the *reserve* production capacity of a Koehring 34-E *twinbatch*® protects your schedules and profits. It hits a top output of 86.7 batches an hour, on 60-second mixing cycle. This lets you pick up any lost time, when you need it, to offset normal job and material delays — maintain a high *average* speed throughout duration of the job — keep batch plant, trucks and finishers working at peak efficiency. With *twinbatch* Autocycle control, every mixing operation is automatic, accurate, and fast. Drum charging, mixing, transfer and discharge are all synchronized by Koehring Batchmeter, a simple timing device. 8-second skip-hoist speeds charging. Big, double-door bucket and wide-swinging boom speed concrete distribution on the grade. What's more, accessibility of every paver maintenance point, plus heavy-duty construction, all help to keep paving jobs rolling *on schedule.*

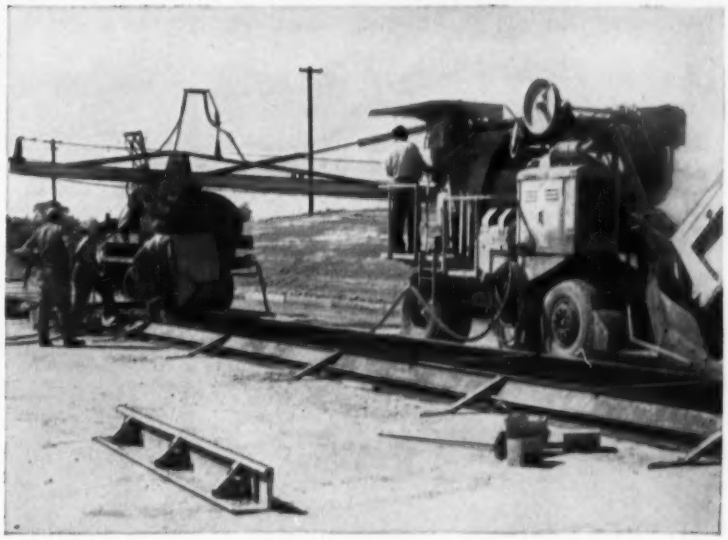
You'll find there's no substitute for the steady output, speed and economy you can get with 34-E *twinbatch* pavers on your big-production highway and airport contracts. Talk it over with your Koehring distributor. He has more information that will interest you. Why not call him *today?*

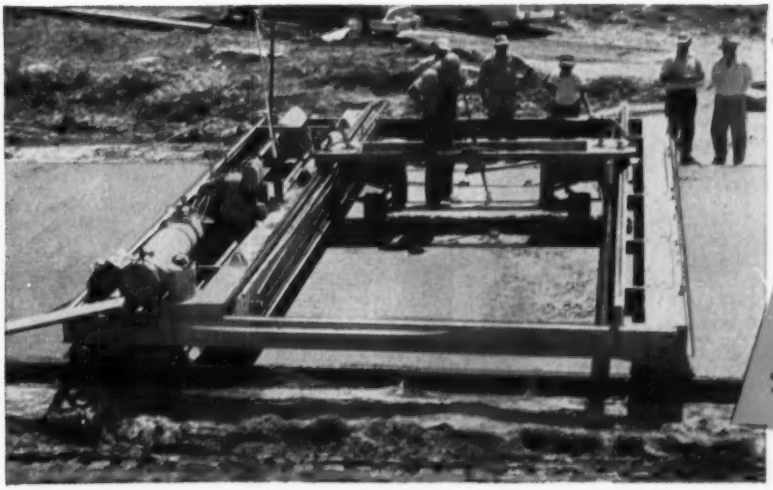
34-E *twinbatch* team works side-by-side on big U. S. airbase

Widening runways on a military airstrip, contractor completed job "on the double" with a pair of big Koehring 34-E *twinbatch* pavers. Notice how one long-boom 34-E poured the outside half, while the other poured the inside half of the strip. For balanced, high rate of production at *both ends* of the job, many contractors team up *twinbatch* pavers with C. S. Johnson automatic batch plants (another Koehring product worth checking). Clamshell cranes, finishers also available in big Koehring paving "package".

Mobile 16-E paves center-strips, intersections, bridge-approaches

On street and highway jobs, there's always extra concrete to be laid in addition to the main slab, such as curbs, gutters, center-strips, scattered intersections, approaches to driveways, bridges and side-roads. Consider the time-saving flexibility you can get with a rubber-tired *twinbatch* in your paving spread. This Koehring 16-E is as mobile as your batch trucks — can get back on the new slab *in as little as 7 days* to do clean-up work, or pave adjoining strips. Also has high elevated discharge, pours into overhead hoppers, forms, chutes. You'll find its usefulness unlimited as a utility unit . . . or as a general-purpose paver.





"Timely" precision-finishing —

is important on every paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete — harsh, wet or dry — produces smooth, mechanically-accurate slab with uniform crown transitions.

KOEHRING Company

Milwaukee 16, Wisconsin

Subsidiaries and divisions: JOHNSON • PARSONS • KWIK-MIX • KOEHRING OF CALIF. • BUFFALO SPRINGFIELD • KOEHRING-WATEROUS LTD. • HYDRAULIC PRESS

SLIP FORMS are erected complete with lift yokes and jacking units over foundation slab. Steel H-beams connect inside forms at quarter points to support studs and work platform.

SLIP FORMS...

continued from page 132

arms that extend down to grasp both inside and outside form.

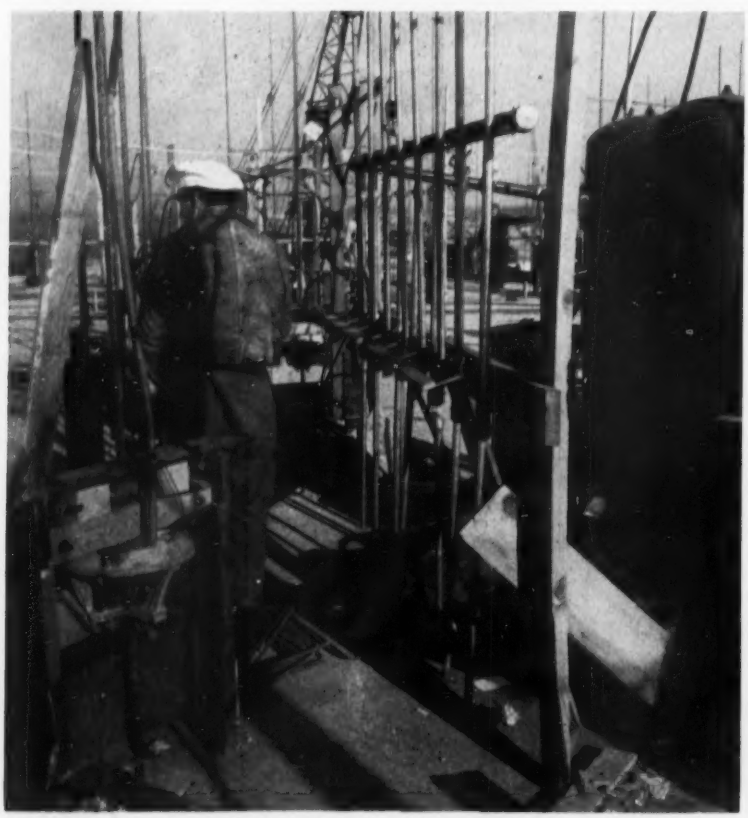
Yokes serve a three-part purpose: (1) To hold forms rigid; (2) To support and center vertical steel jacking rods; (3) To secure to, and support, the jacks themselves.

Lifting Procedure

The jack engages the vertical steel rod. Secured to the yoke, it travels up the rod in ½-in. increments pulling the forms up at the same rate of speed. Workmen stationed on the work platform place reinforcing steel and concrete continuously during the lift.

Each jack weighs less than 30 lb. Shaped somewhat like a bellows, it travels up the rod by a set of steel jaws that disengage during compression and grip the jack rod —holding the form level—when compression is released. A master valve panel controls the flow of air into the jack.

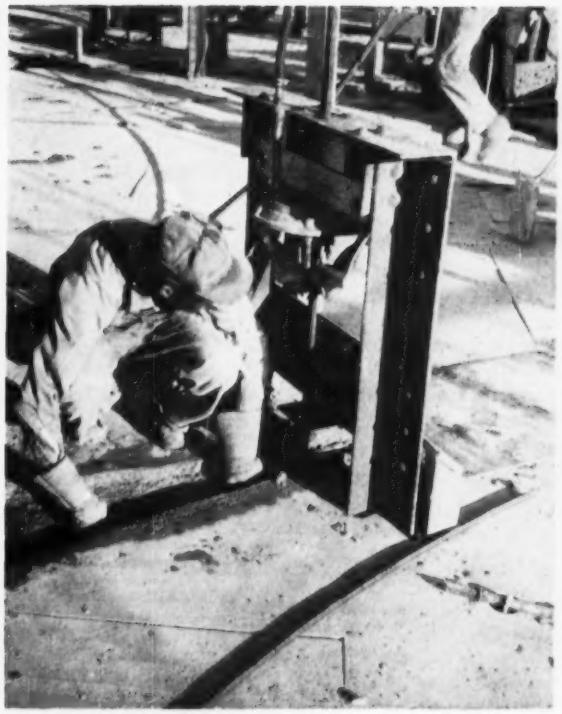
Air power comes from an engine-driven compressor unit. Re-



AIR FEEDS to pneumatic jacks through pipes and hose. By strapping furring strip across individual feed handles workman is able to actuate a congress of jacks simultaneously.

LEVELING DEVICE made from plastic hose filled with water checks pour elevations.

JACK JAWS LOCK into jack rods following each blast of air to hold slab in place.



SINGLE RODS are pressed into concrete during pour without interrupting rise of forms.

WORKMAN VIBRATES just-poured concrete with a midget electric vibrator that is moved easily about job by single man.

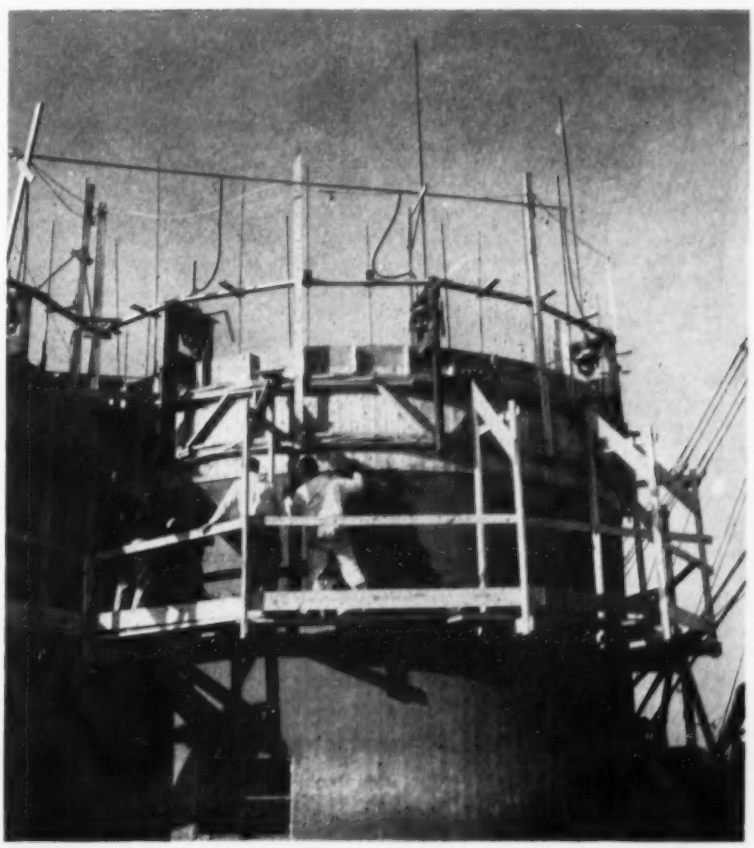
serve tanks are included in the system between compressor and master valve panel. The panel controls the complete system sending columns of compressed air ranging from 80 to 100 psi throughout the system.

While jacks are working in congress, a water leveling device keeps accurate check of grades to prevent jacks from outclimbing one another because of unequal air feed.

The device consists of an open-ended plastic hose fitted upright to each jack. Each length runs down through the work platform and under to connect to a central spigot. Hoses are filled to within a few inches of each upright end with water. While all jacks are level, a stick is secured to each yoke and marked at the level of the water.

During the lift, the water level of each hose is checked frequently against the mark. Should the water level rise above or fall below the mark, the jack is adjusted upward or downward until the water in the hose is level with the line.

According to the supplier, the jacks can be harnessed to almost any type of slip-form yoke. They come fitted, too, with an all-weather device that eliminates hazards arising from compressed air under freezing conditions.



SCAFFOLDS ATTACHED to forms ride up during jacking operations. Workmen stationed aboard scaffolds rub and spackle exposed concrete wall and patch around windows.

HEAVIEST-DUTY, LARGEST GPM HYDRAULIC SYSTEMS AVAILABLE
EASILY OPERATED... FAST CYCLING...

HOPTO®

DIGGER • SHOVEL • CRANE

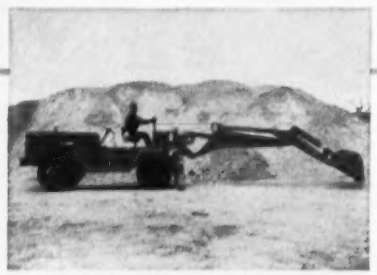
Put a man on a HOPTO and he's *twice* the money-maker! HOPTO's effortless 20-second cycles . . . HOPTO's *new*, more powerful triple tandem pump and split hydraulic system . . . and HOPTO's fast switch from backhoe to shovel give you *more* for your money . . . *more* for your time! Get the facts on HOPTO—new and better than ever!

Gives you MORE

WITH BACKHOE OR SHOVEL BUCKET

30 SECOND SET-UP! Independently controlled hydraulic outriggers level and stabilize unit . . . *from operators seat . . . in thirty seconds!*

HOPTO 360-57-90 takes a half-yard bite, is *the only unit with a 360° continuous swing*, and cycles fast with backhoe or shovel bucket. Mounts on truck or carrier.



HOPTO 185 SPR gives you an integral built digger-shovel-crane on rubber. Handles up to 30" bucket. Rolls to job-site at highway speeds.

HOPTO 190 SPC, the complete unit model that packs real work-capacity on tracks in a mobile, compact unit that gets in anywhere . . . even on marshy soils.

HOPTO 200 DTM-57-72 mounts on any 2-ton or larger truck, handles up to 30" backhoe or shovel.

*SPECIFICATIONS

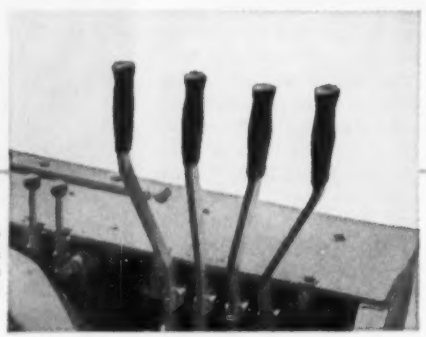
MODEL	SWING	REACH	DIGGING DEPTH	LOADING CLEARANCE BACKHOE	LOADING CLEARANCE SHOVEL BUCKET
360-57-90	360°	30'	20'-0"	15'-6"	16'-10"
200 DTM-57-72	200°	19'	13'-6"	11'-6"	9'-3"
190 SPC	190°	17'-2"	11'-3"	9'-3"	9'-7"
185 SPR	185°	17'-2"	11'-3"	9'-3"	9'-7"
80 CTM	180°	14'-6"	10'-0"	7'-1"	7'-5"

*180° BUCKET TILT ON ALL MODELS

HOPTO 80 CTM mounts on a crawler tractor, handles up to 30" bucket, cuts costs by using power you now have.

One of the twelve HOPTO models is tailor-made for you. Write stating your needs and complete information on the unit to fit your requirements will be promptly forwarded.

BADGER MACHINE COMPANY
WINONA, MINNESOTA DEPT. H

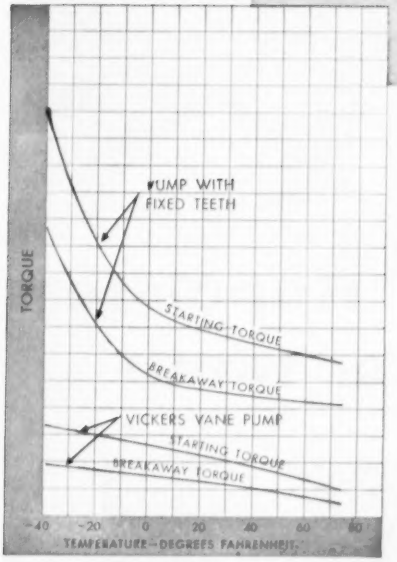


NEW SIMPLE CONTROLS

An hour's practice and a handyman can safely handle a HOPTO! Four handy levers control boom and bucket; two separate levers give individual control of each outrigger for fast leveling and stabilizing from operator's seat . . . in half a minute!

MUCH EASIER COLD WEATHER STARTING

Sno-Cat (without body) undergoing tests in extreme cold in the Pyrenees mountains preparatory to being used by French scientific expedition at the South Pole. Sno-Cats will also be used by the U.S. Navy and British Expeditions to the Antarctic.



Curves based on comparative tests of a Vickers Balanced Vane Type Pump and an equal capacity pump with fixed teeth. Oil used in both was SAE 10W premium grade.

Another Reason Why

TUCKER SNO-CATS have

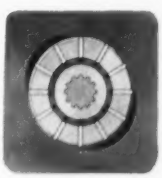
VICKERS® Balanced Vane Pumps

The Sno-Cat operates where it is really cold . . . high in the mountains . . . with U. S. Navy, French and British Expeditions in the bitter wastes of the Antarctic . . . wherever snow is so deep that wheel vehicles fail.

Like many other vehicles that must operate in cold weather, the Sno-Cat uses a Vickers Vane Pump to avoid the extra starting handicap that would be imposed by a hydraulic pump with fixed teeth or spring-extended vanes. In extremely low temperatures such a pump seriously increases starting load over normal (see curves at left) . . . at a time when the cold has substantially reduced the power of the starting battery. The diagrams below at the left show why Vickers Vane Pumps provide much easier cold weather starting.

All Tucker Sno-Cats use a Vickers hydraulic power steering system. In addition to the pump, these systems include a steering booster, a volume control, and overload relief valve.

Any vehicle which must operate in cold weather needs a hydraulic pump that provides "no-load starting". Let us tell you more about it . . . and about the many other reasons for using Vickers Balanced Vane Pumps.



Schematic diagram of Vickers Balanced Vane Type Pump showing how sliding vanes are retracted at normal engine cranking speeds. No oil is pumped and there is practically no starting load.

Similar diagram shows how pump vanes are extended when engine fires. Pumping then begins and continues at all engine speeds (vanes are held in intimate contact with cam ring by system pressure in addition to centrifugal force).

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
ADMINISTRATIVE and ENGINEERING CENTER
Department 1494 • Detroit 32, Michigan

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N.J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) • PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON • WORCESTER
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

Vickers Balanced Vane Type Pumps for mobile equipment are available in five basic sizes having 15 normal delivery ratings and a variety of mountings. Other advantages include: high efficiency, automatic wear compensation, hydraulic balance, dependability and long life. Write for Catalog M-5101.

7376

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

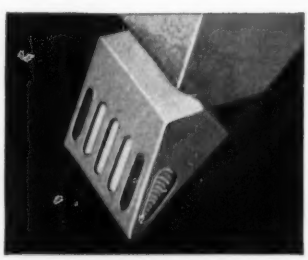
Amsco "WEAR-SHARP" Repointers outlast 2-part dipper teeth

One of the largest contractors on the St. Lawrence Seaway Project proved our point! He switched from two-part dipper teeth to Amsco® "WEAR-SHARP" Repointers, with grooves filled in by hardfacing.

Result: according to the contractor's own report, he's getting much better service life out of the tooth. And, in really rugged service, the teeth retain their cutting edge much longer . . . helping to maintain digging speed and conserve power.

Take a tip from this contractor's experience. Order Amsco "WEAR-SHARP" Repointers from your distributor—for longer service life, for better cutting action.

Hardface with Amsco Hardfacing Alloys and Welding Equipment, too!



"WEAR-SHARP" Repointers*

. . . have grooves on each end and on corner faces, which can be filled in with a tough hardfacing deposit. This equalizes wear and maintains a sharp cutting edge, prevents teeth from rounding or blunting. Available straight (as shown) or with crescent-shaped backs.

*Patented

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS; JOLIETTE, QUEBEC

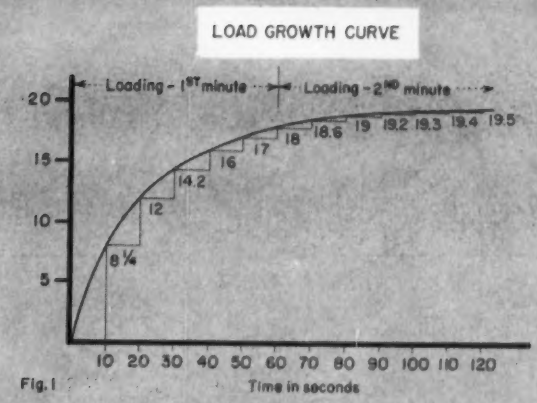


Fig. 1

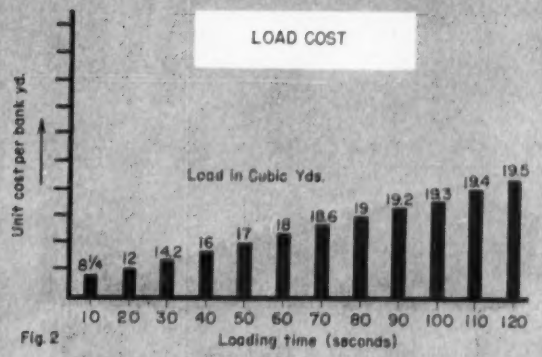


Fig. 2

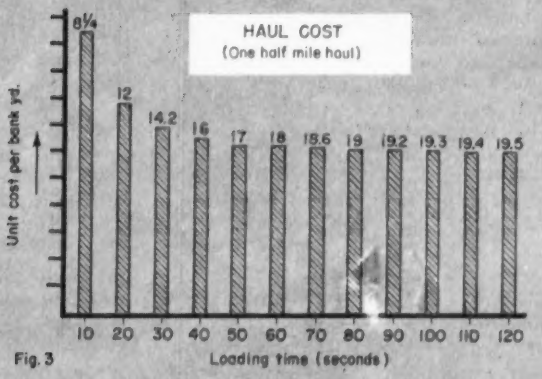


Fig. 3

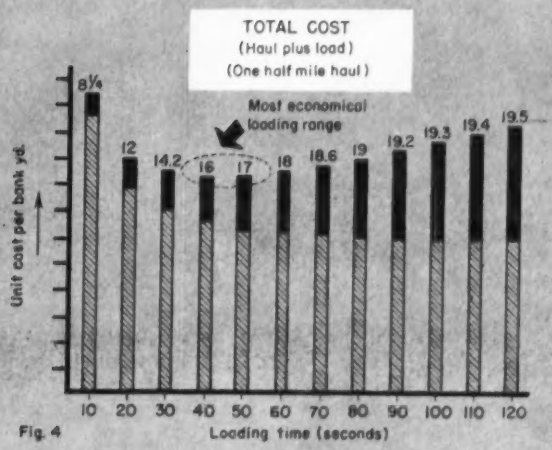


Fig. 4

How to Load Scrapers Economically

By ROBERT C. MORRILL
Supervisor, Wheel Tractor Development
Caterpillar Tractor Co.

OVER THE YEARS, earthmoving has evolved from a "seat of the pants" operation to one that is far more scientific. High labor costs, more expensive machines, and increased competition today have combined to make equipment users more conscious than ever of machine productivity, hourly costs, and, of course, operating efficiency.

Costs of moving dirt with wheel tractor-scrapers can be significantly decreased through proper scraper loading methods. Investigations of scraper loading characteristics, including field weight tests and time studies on actual construction projects, have brought new evidence of economies that can be realized.

The basic principle of scraper loading is simple. The first few yards are obtained quickly—resistance is low and a lot of material is loaded in a short time. As the load builds up, resistance increases and loading rate falls off. Finally a point is reached where load growth ends completely, either because resistance has become too great for available power or because the scraper has run out of capacity and dirt is just passing through.

Fig. 1, a typical load growth curve, shows the accumulation of load in a scraper, in bank cubic yards, against loading time. While actual loading time and load in yards vary considerably with different conditions encountered, the shape of the load growth curve for a given scraper changes little.

All of the accompanying charts are based upon observation of a Caterpillar DW21-No.470 scraper unit, which has a struck capacity of 18 cu yd.

In the example used, more than 70% of the load was obtained during the first 30 sec of loading time, and over 90% by the end of the first minute of loading. A capacity load was reached after nearly 2 min of loading time. Thus, it took as long to get the last 10% of the load as it did to get the first 90%.

Loading cost is of major importance since it includes not only ownership and operating cost of the scraper unit but also push-tractor costs. Fig. 2 shows how unit loading cost varies for loads of increasing

WITH BIG PUSHER, scraper quickly picks up heaping load. Sometimes it should leave pit without last, slow yards packed in.

FIELD ENGINEER of Caterpillar Tractor Co. weighs load on scraper's rear wheel during tests to determine most economical method of loading the scraper. Many of these tests, on all makes of equipment, were conducted in the field on job sites.

size and loading times. In this example, the per-yard cost of obtaining a 19½-yd load in 2 min is nearly twice that of picking up an 18-yd load in 1 min.

Hauling cost is a second consideration. Ownership and operating costs of wheel tractor-scrapers increase with the amount of load hauled because higher fuel, tire, and repair costs can be expected. Also, the time required to haul larger loads is somewhat greater.

Fig. 3 shows unit hauling cost for loads of increasing size and loading time, based on a ½-mi haul for this example. Notice that an 8¼-yd load obtained in 10 sec costs most, per yard, to haul. The light load enabled the scraper unit to make an extremely fast trip, but the pay yardage was too small. As load size increases, unit hauling cost decreases.

It has been established that loading costs *increase* the longer a unit stays in the cut, while unit hauling costs *decrease*. At some point the sum of these two costs reaches a minimum to produce the most economical combination cost for load PLUS haul.

Fig. 4 shows what happens when unit loading and hauling costs are totaled for different size loads. In this example, a 16- to 17-yd load produced the cheapest dirt; this load was obtained in 40 to 50 sec. Actually, loading up to 1 min would not have substantially increased costs. Obviously, it would not be practicable to set rigid, narrow loading limits.

A question might be: "Will this most economical loading range give maximum production?" Maximum production, of course, is important on any job—particularly where available time is short or equipment limited.

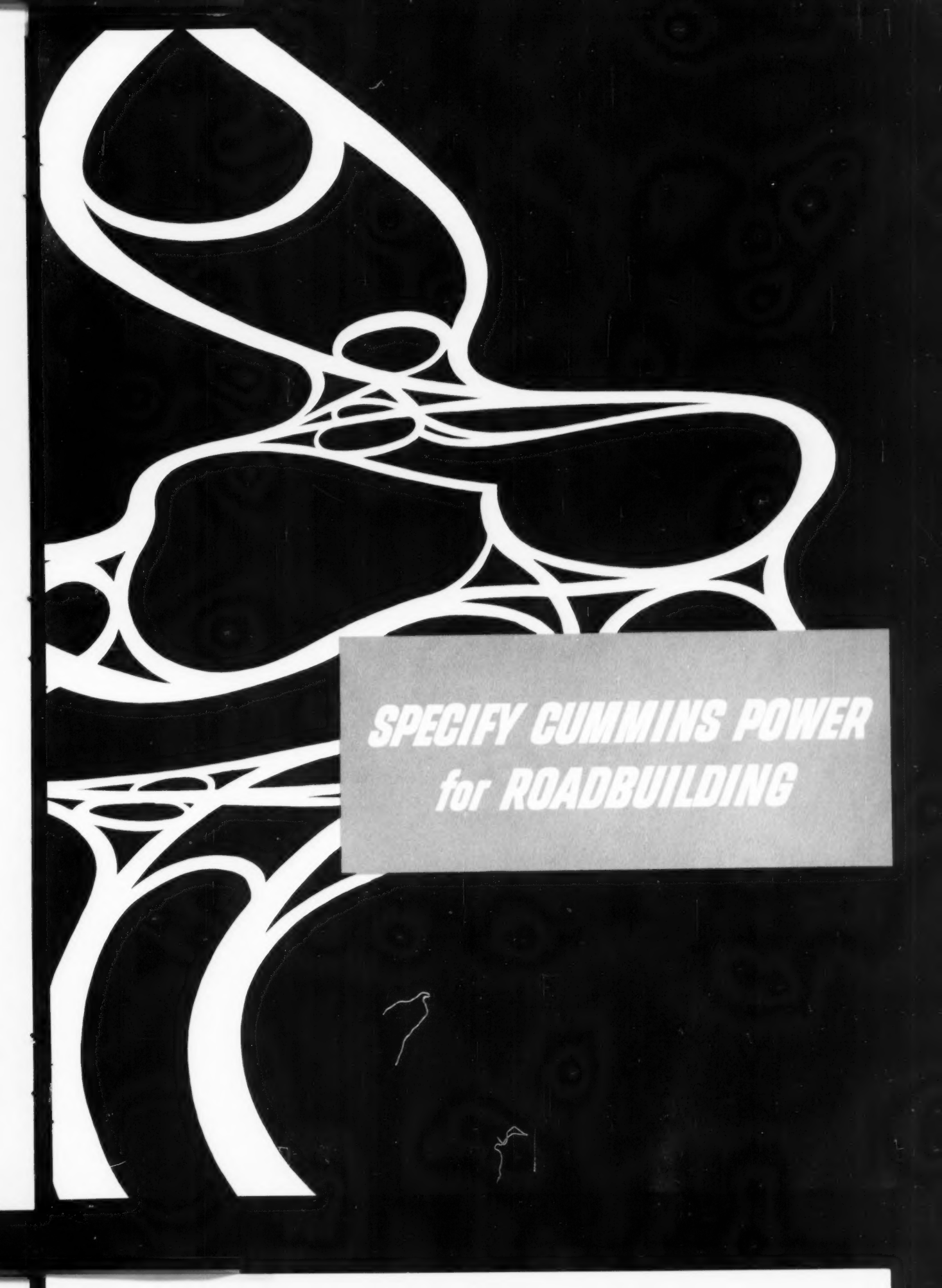
It has been found that the load size and loading time that produce the lowest cost per yard practically always yield maximum yardage production too. No significant production sacrifice is required to achieve maximum loading economy.

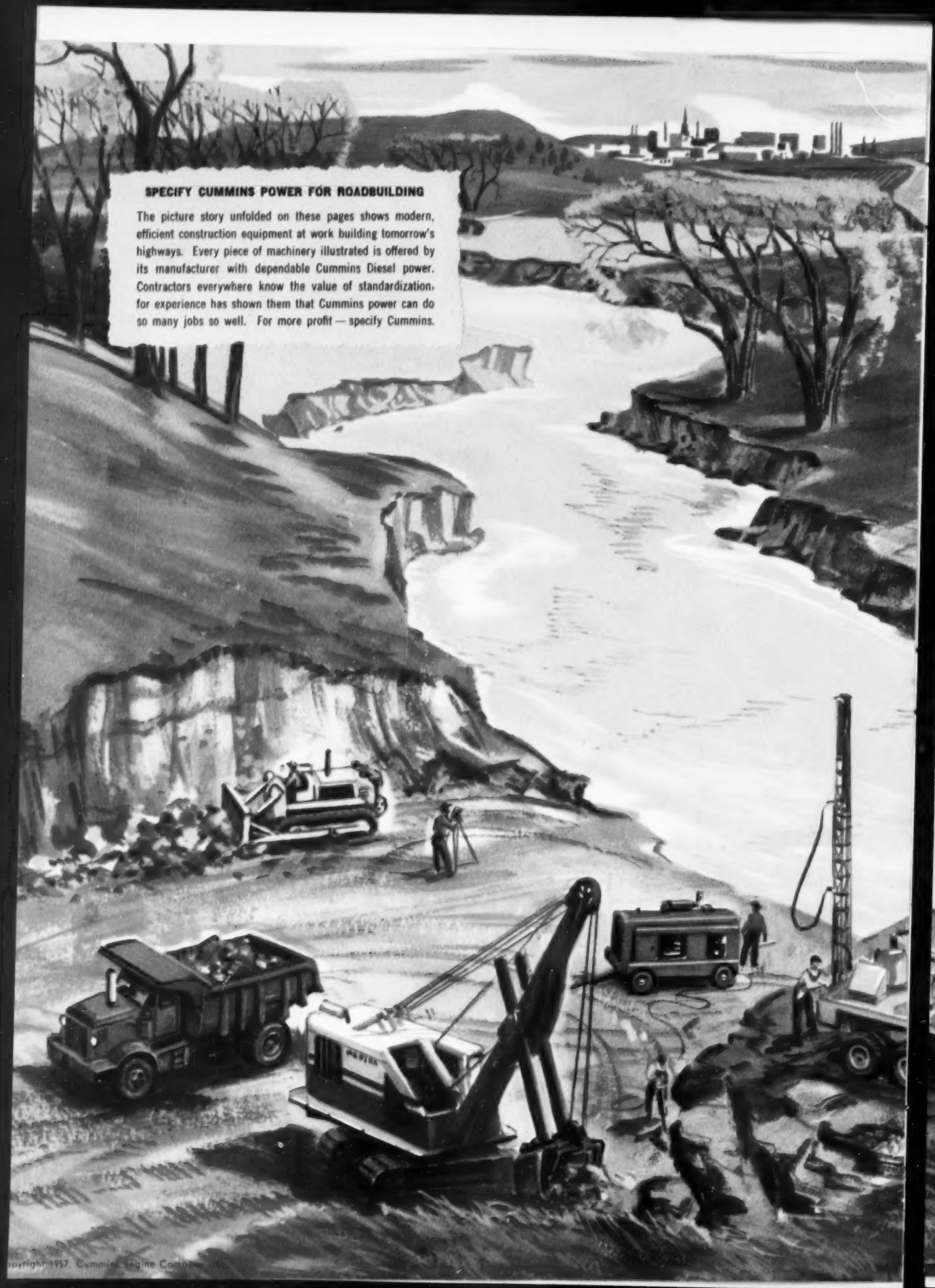
Rules of thumb for economical scraper loading can be based on capacity pay load—the maximum bank yardage of a particular material that can be loaded in a standard scraper. Studies conducted on earth-moving jobs representing a broad range of conditions show that the most economical scraper load ranges from 80 to 95% of capacity pay load. In general, the smaller loads, around 80% of capacity, are most economical on short hauls while larger loads are applicable to long, or particularly slow, hauls.

Economical loading time is not often materially effected by the use of sideboards. Current machines, featuring greatly improved loading characteristics, obtain their economical load rapidly. And, except for unusual conditions, they should stop loading *before* sideboarded capacity has any dirt in it. In other words, the load that usually produces the lowest cost and the highest production is a load that can be hauled without sideboards. Exceptions to this rule include, of course, very long hauls and light materials such as coal.

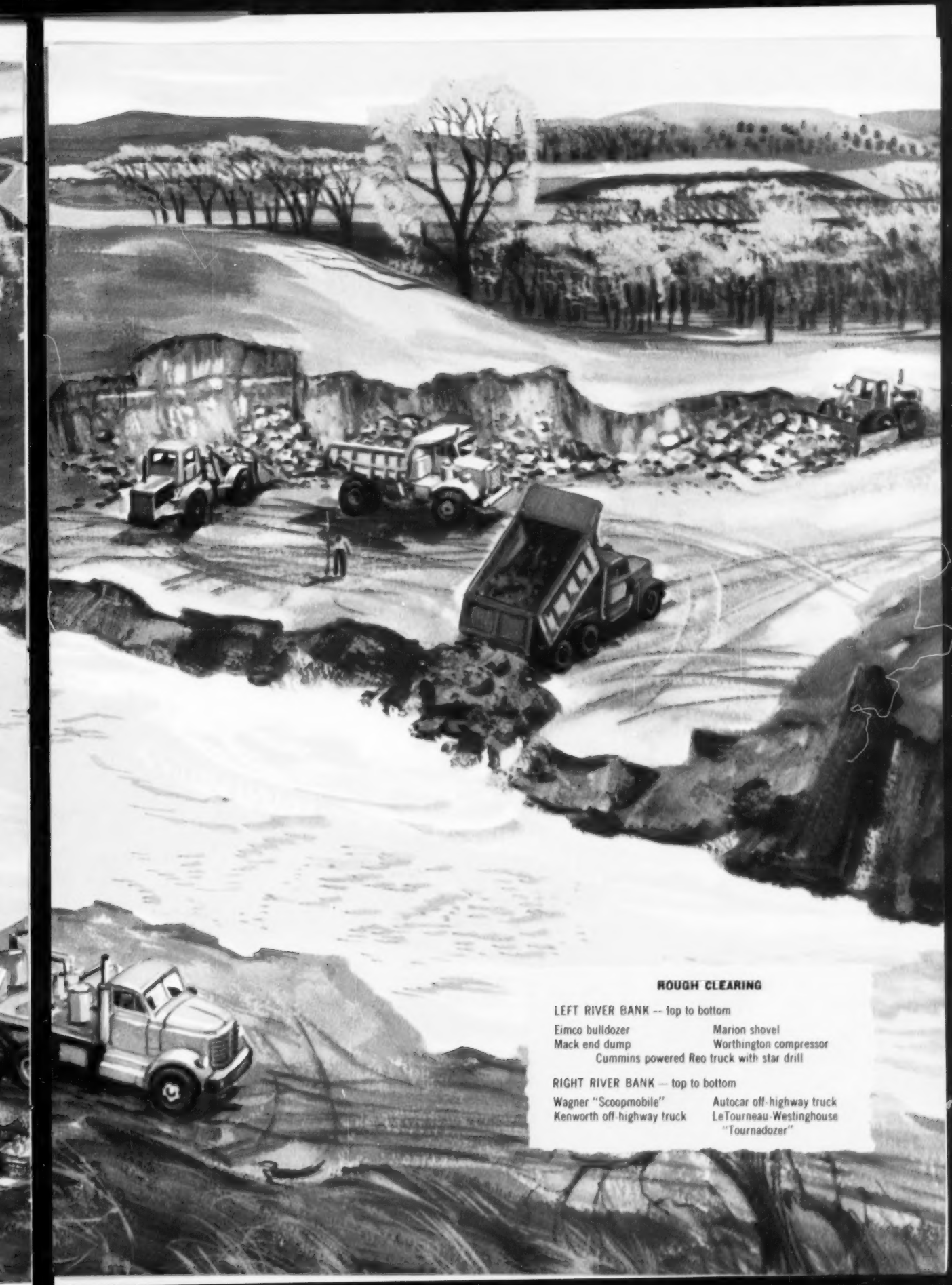
Actually, sideboards sometimes bring a disadvantage. Wheel tractor-scraper operators generally try to get a full load, and sideboards may increase the tendency to ride the pusher far beyond economical loading time.

The conclusion of these tests are these: For a given condition of material and haul distance, there is an economical loading range—a pay-load and loading time that will produce lowest cost per yard. Economical load is practically always less than capacity load. Sideboards seldom help because loading costs rise rapidly as time is spent trying to use the extra capacity they provide.


SPECIFY CUMMINS POWER
for ROADBUILDING


SPECIFY CUMMINS POWER FOR ROADBUILDING
The picture story unfolded on these pages shows modern, efficient construction equipment at work building tomorrow's highways. Every piece of machinery illustrated is offered by its manufacturer with dependable Cummins Diesel power. Contractors everywhere know the value of standardization, for experience has shown them that Cummins power can do so many jobs so well. For more profit — specify Cummins.

Copyright 1957, Cummins Engine Company, Inc.



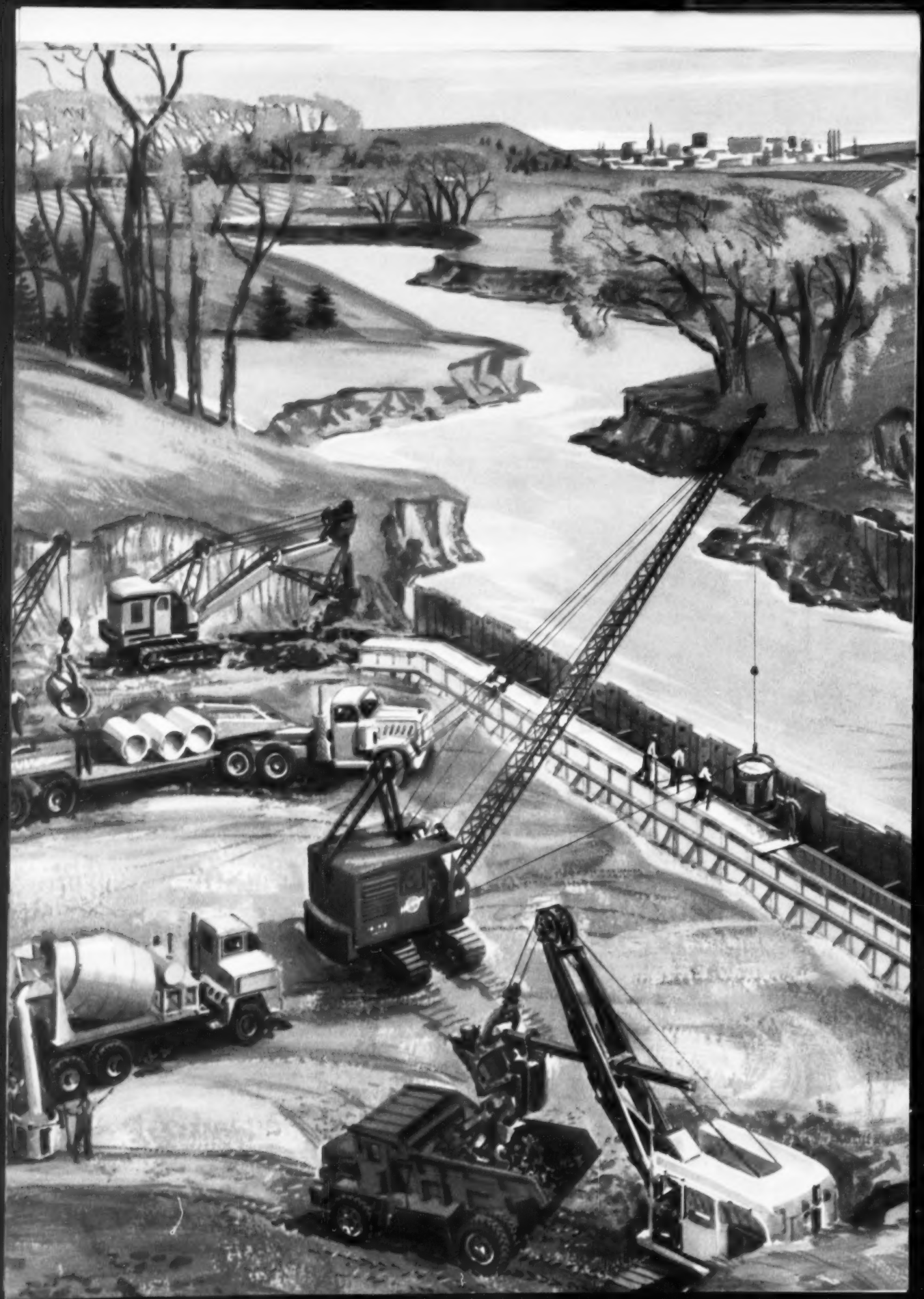
ROUGH CLEARING

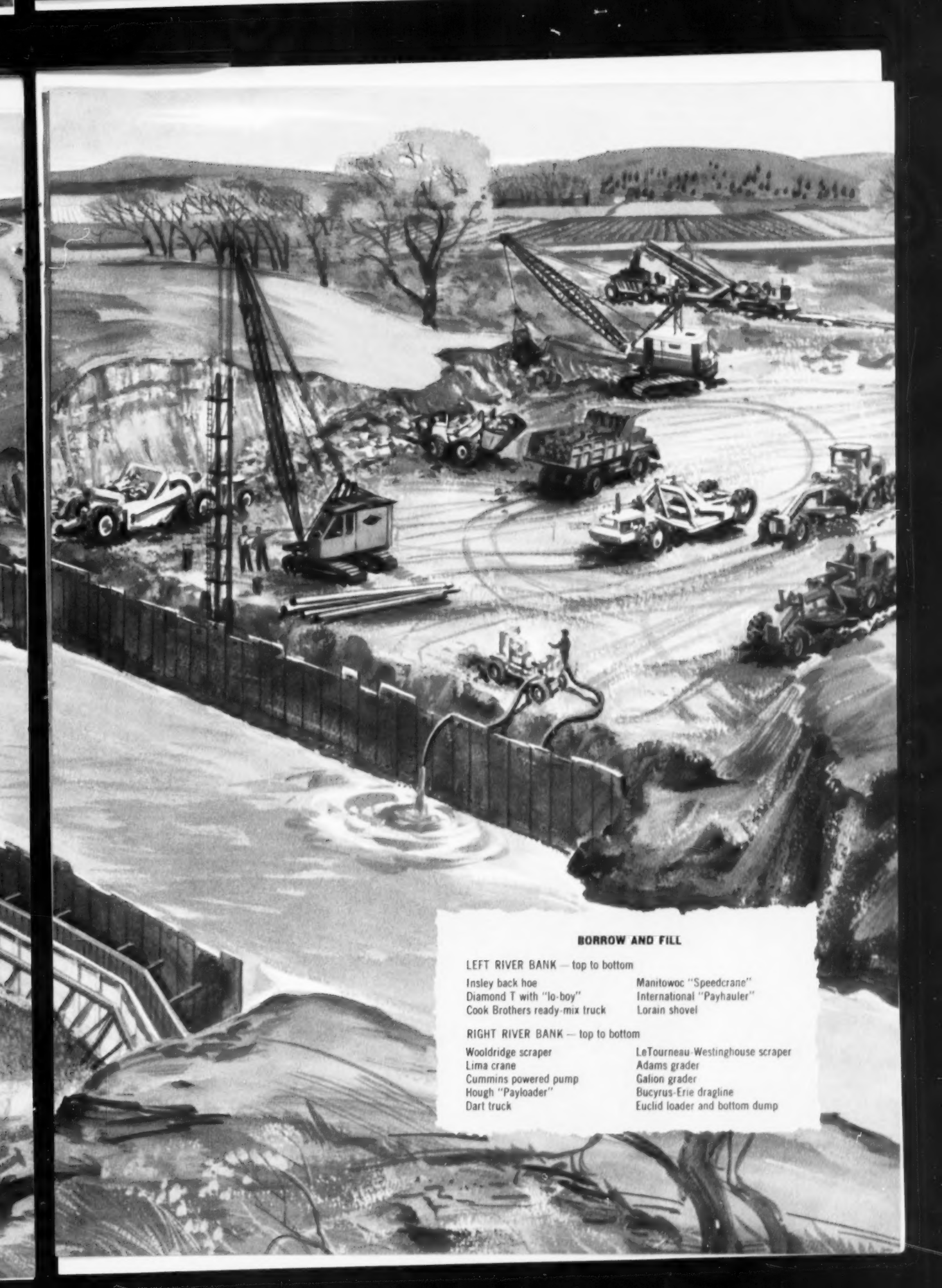
LEFT RIVER BANK — top to bottom

Eimco bulldozer
Mack end dump
Marion shovel
Worthington compressor
Cummins powered Reo truck with star drill

RIGHT RIVER BANK — top to bottom

Wagner "Scoopmobile"
Kenworth off-highway truck
Autocar off-highway truck
LeTourneau-Westinghouse "Tournadozer"





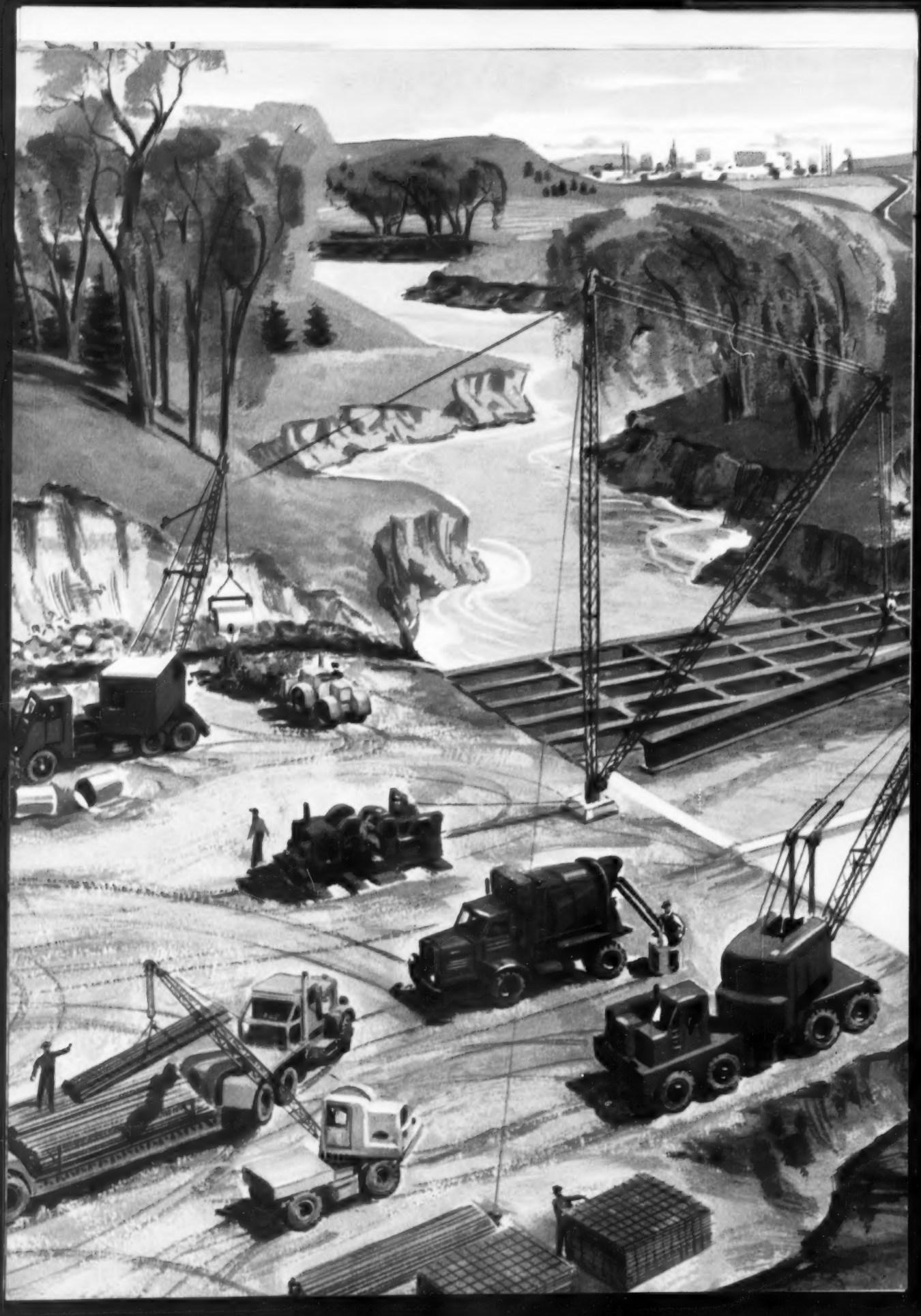
BORROW AND FILL

LEFT RIVER BANK — top to bottom

Insley back hoe
Diamond T with "lo-boy"
Cook Brothers ready-mix truck
Manitowoc "Speedcrane"
International "Payhauler"
Lorain shovel

RIGHT RIVER BANK — top to bottom

Wooldridge scraper
Lima crane
Cummins powered pump
Hough "Payloader"
Dart truck
LeTourneau-Westinghouse scraper
Adams grader
Galion grader
Bucyrus-Erie dragline
Euclid loader and bottom dump



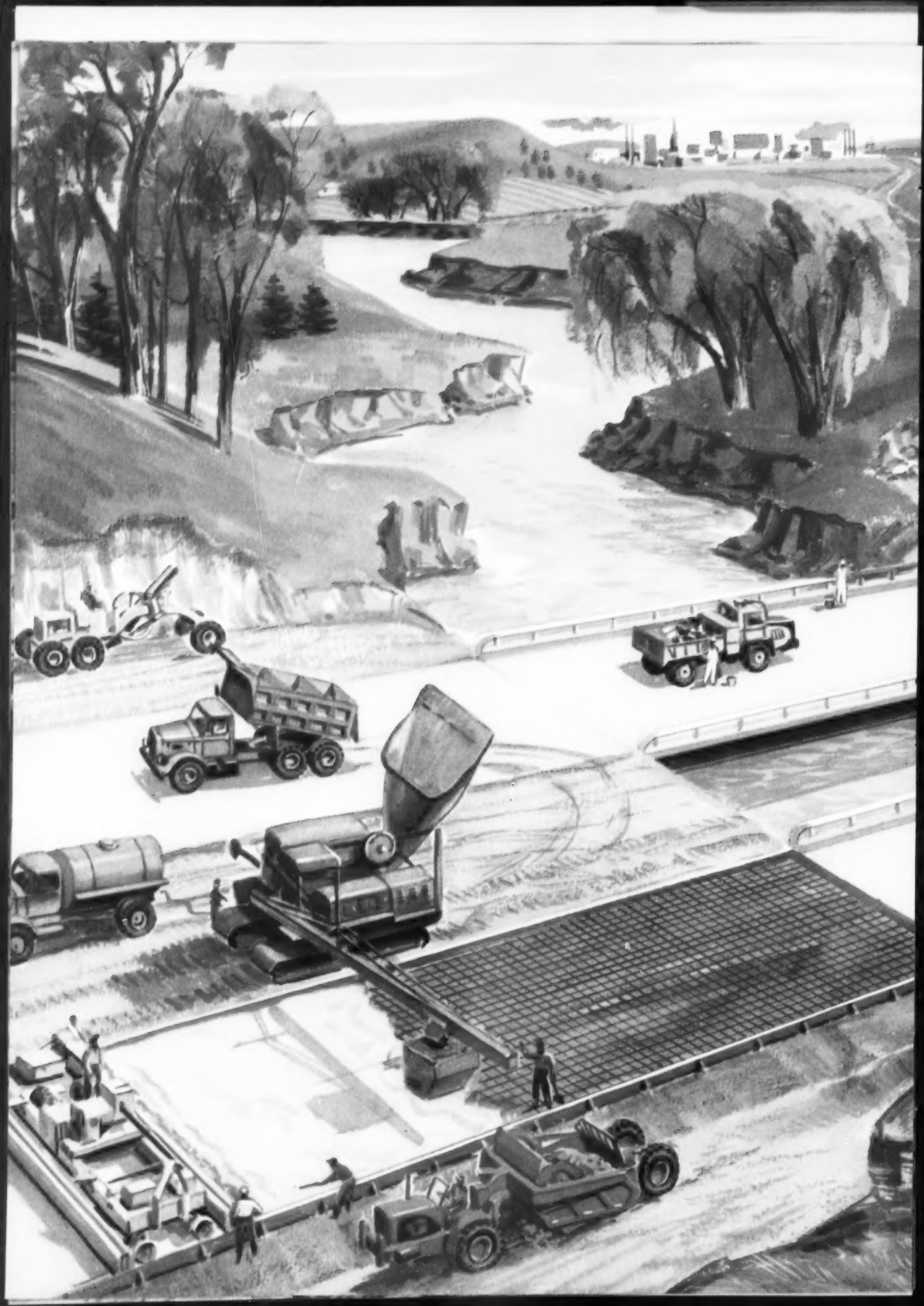
FINAL BASE WORK

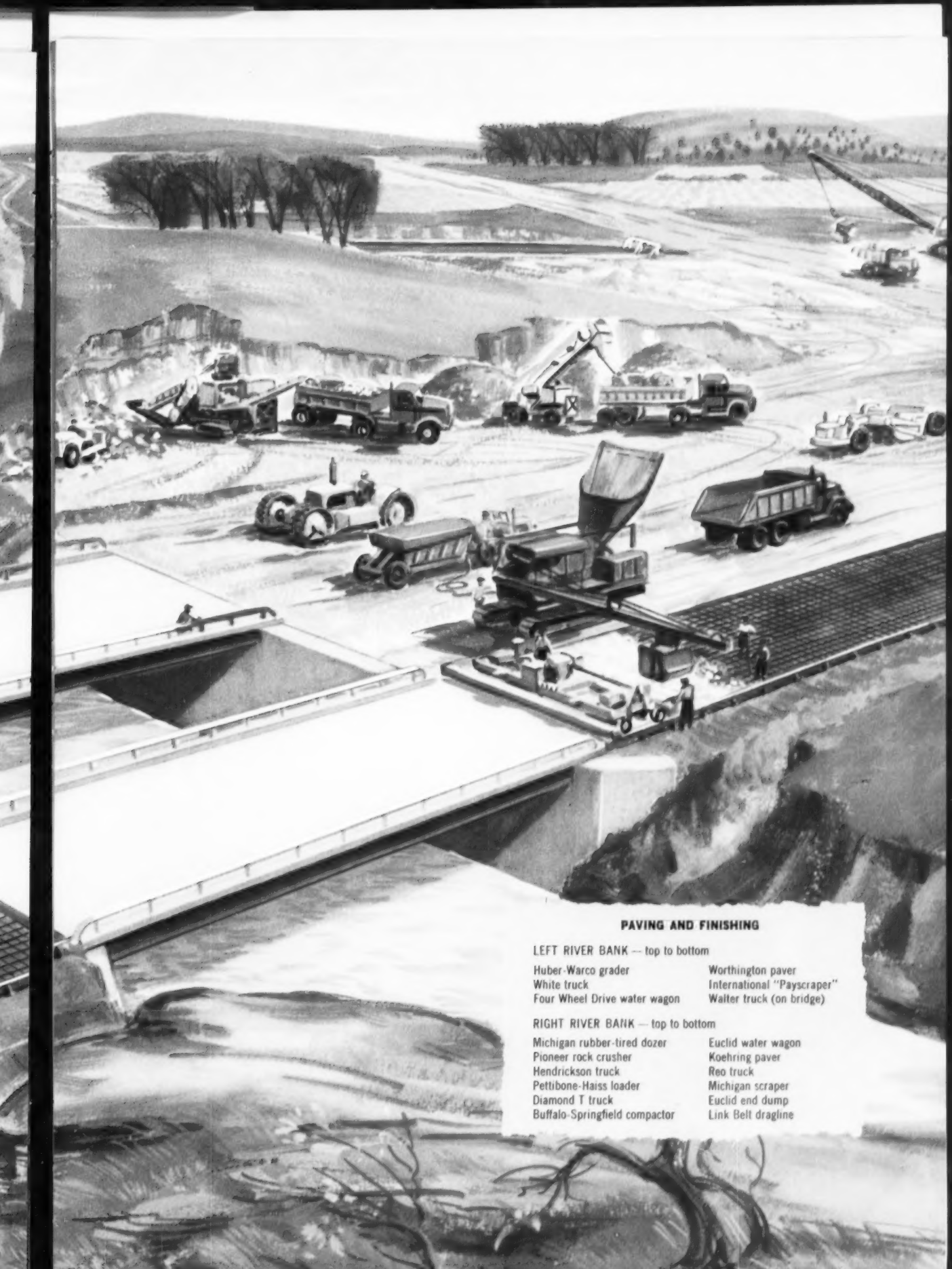
LEFT RIVER BANK — top to bottom

Bay City mobile crane
Wagner bulldozer
American hoist
Autocar tractor with "lo-boy"
Oshkosh ready mix truck
R. G. LeTourneau mobile crane
Thew Moto-crane

RIGHT RIVER BANK — top to bottom

Cummins powered generator
Iowa "Cedar Rapids" rock crusher
Peterbilt truck
Hayes truck
LeTourneau-Westinghouse scraper
Gradall
Manitowoc shovel
Pacific truck
Kenworth truck
MRS scraper





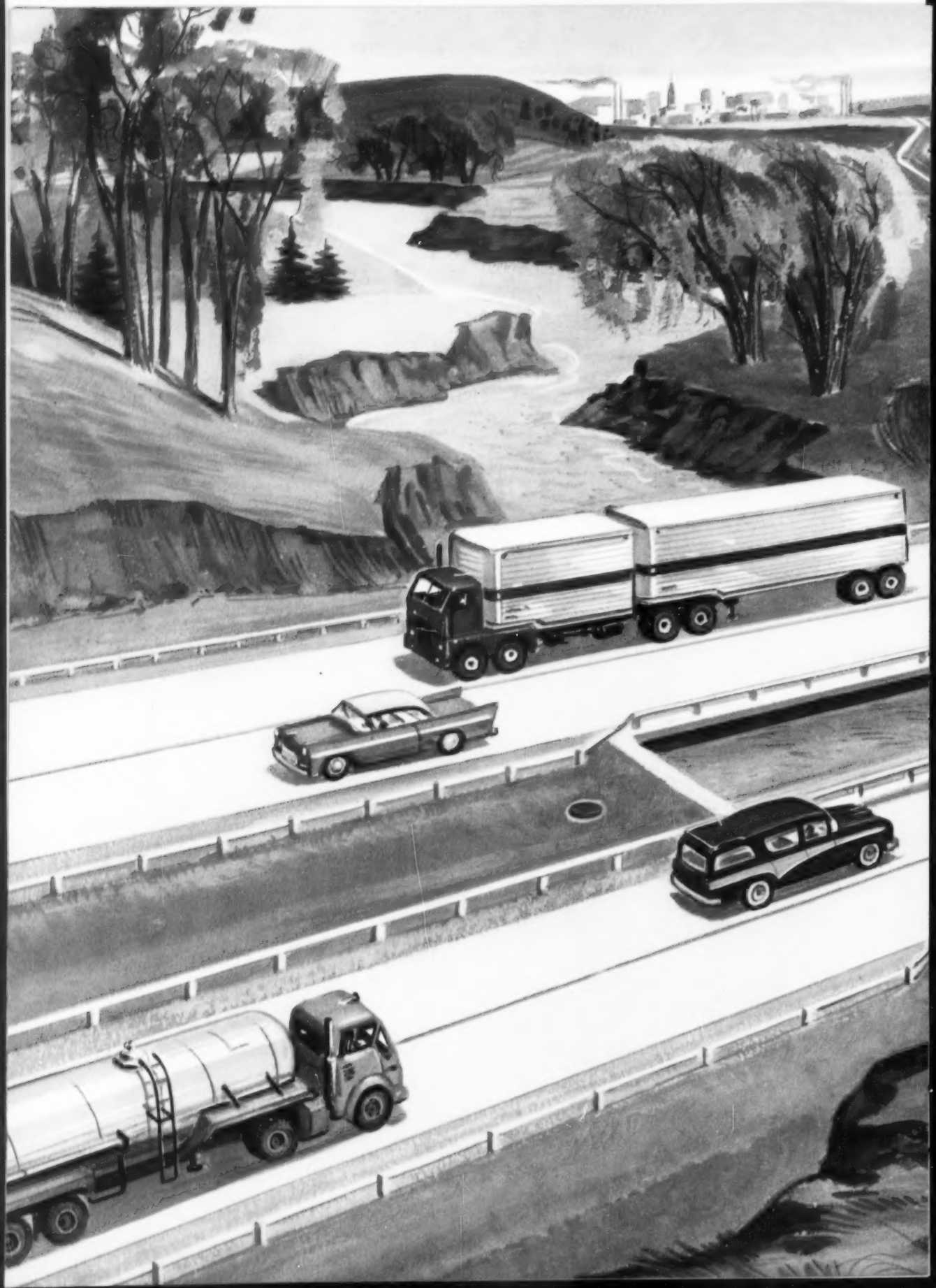
PAVING AND FINISHING

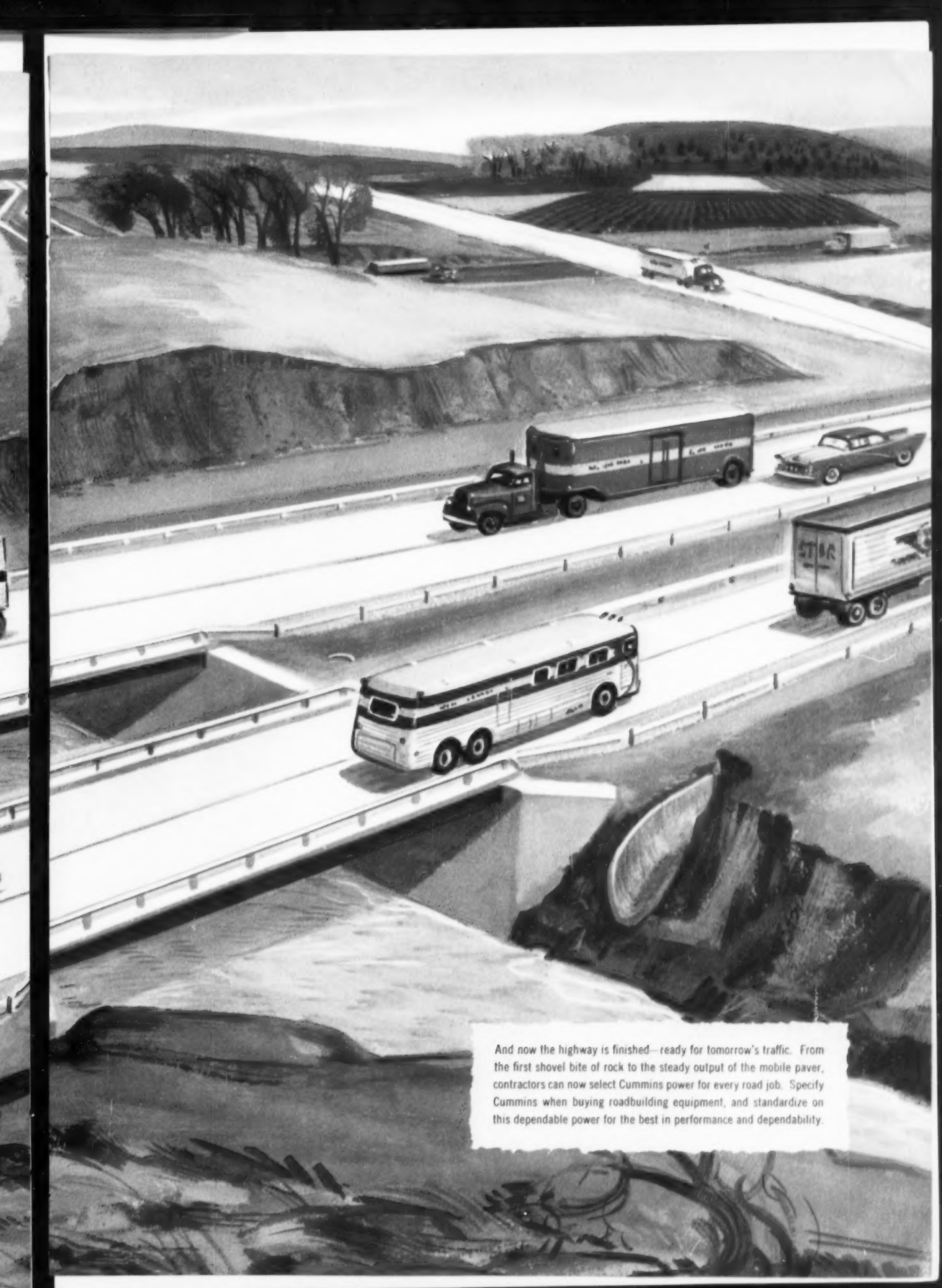
LEFT RIVER BANK — top to bottom

Huber-Warco grader	Worthington paver
White truck	International "Payscraper"
Four Wheel Drive water wagon	Walter truck (on bridge)

RIGHT RIVER BANK — top to bottom

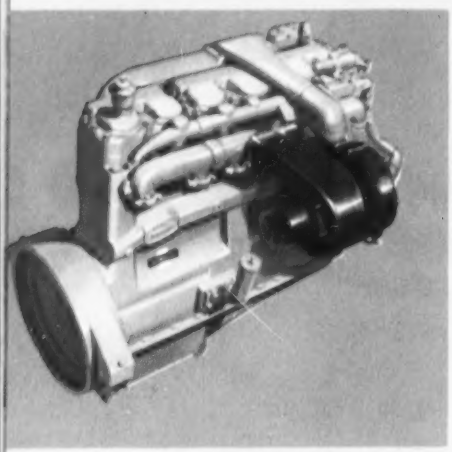
Michigan rubber-tired dozer	Euclid water wagon
Pioneer rock crusher	Koehring paver
Hendrickson truck	Reo truck
Pettibone-Haiss loader	Michigan scraper
Diamond T truck	Euclid end dump
Buffalo-Springfield compactor	Link Belt dragline





And now the highway is finished—ready for tomorrow's traffic. From the first shovel bite of rock to the steady output of the mobile paver, contractors can now select Cummins power for every road job. Specify Cummins when buying roadbuilding equipment, and standardize on this dependable power for the best in performance and dependability.

6 REASONS WHY YOU SHOULD STANDARDIZE ON CUMMINS...



1. More than 50 leading manufacturers offer Cummins power in over 300 models of roadbuilding equipment.
2. Standardization will reduce parts inventory and save space, time and money. Bearings, pistons and other parts are interchangeable on many Cummins models.
3. Cummins makes available to roadbuilders more than 300 service points throughout the United States, Canada and around the world devoted to the sale and service of diesel engines.
4. Cummins offers five TURBODIESEL engines that up roadbuilding production and lower roadbuilding costs.
5. Exclusive Cummins PT fuel system meters fuel simply and accurately — costs roadbuilders less to maintain.
6. Cummins offers the finest dirt protection features for long engine life.

Learn more about Cummins Diesels from your Cummins Distributor. He will tell you of his special on-the-job services showing further why it pays to "Specify Cummins Power for Roadbuilding."

CUMMINS gives you the big plus MORE PROFIT

CUMMINS ENGINE COMPANY, INC. COLUMBUS, INDIANA

EXPORT — CUMMINS DIESEL EXPORT CORPORATION — COLUMBUS, INDIANA, U. S. A. — CABLE: CUMDIEX
OVERSEAS FACTORY — CUMMINS ENGINE COMPANY LIMITED — SHOTTS, LANARKSHIRE, SCOTLAND — CABLE: CUMSCOT

BULLETIN 950147

Litho in U.S.A.

Grades of Asphalt Cement

Specifications For Asphalt Cements

CHARACTERISTICS	A S.T.M METHOD	PAVING			
Penetration (77 deg, 100 g., 5 sec)	D 5	60-70	85-100	120-150	200-300
Flash Point (Cleveland Open Cup, deg)	D 92	450+	450+	425+	350+
Loss on Heating (325 deg, 5 hrs, percentage)	D 6	1-	1-	2-	2-
Penetration After Loss on Heating (77 deg, 100 g, 5 sec, percentage original)	D 5	70+	70+	70+	60+
Ductility (At 77 deg, cms)	D 13	100+	100+	60+	60+
(At 60 deg, cms)	D 13				
Solubility in Carbon Tetrachloride (percentage)	D 4*	99.5+	99.5+	99.5+	99.5+
Temperature of Use (For spraying, deg)		275-350	275-350	275-350	275-350
(For mixing, deg)		275-325	275-325	275-325	200-275

*Except that carbon tetrachloride is used instead of carbon disulphide as solvent, Method No. 1

THE ASPHALT INSTITUTE has announced a reduction in the number of grades of asphalt cement for paving from eight to four. J.E. Buchanan, president of the Institute, said the action came after discussions with asphalt users, highway officials, and refinery representatives.

"The advantages of the reduction in grades are evident," he said. "It will simplify the storage and handling problem at the refinery and will certainly make these standard grades more readily available from all asphalt refiners. In turn, the user can reasonably expect better service in delivery and superior distribution of the paving product."

The four basic grades now officially recognized by the Institute are 60-70, 85-100, 120-150, and 200-300 penetration. A fifth grade of 40-50 penetration asphalt is recommended for special and industrial uses.

Grades eliminated were 50-60, 70-80, 100-120, and 150-200 penetration. The Institute said it was satisfied that elimination of these grades will not affect the quality of asphaltic cement mixes.

TRUCK ENGINE DRIVE Or INDEPENDENTLY POWERED . . .

TRANSCRETES make you more money!

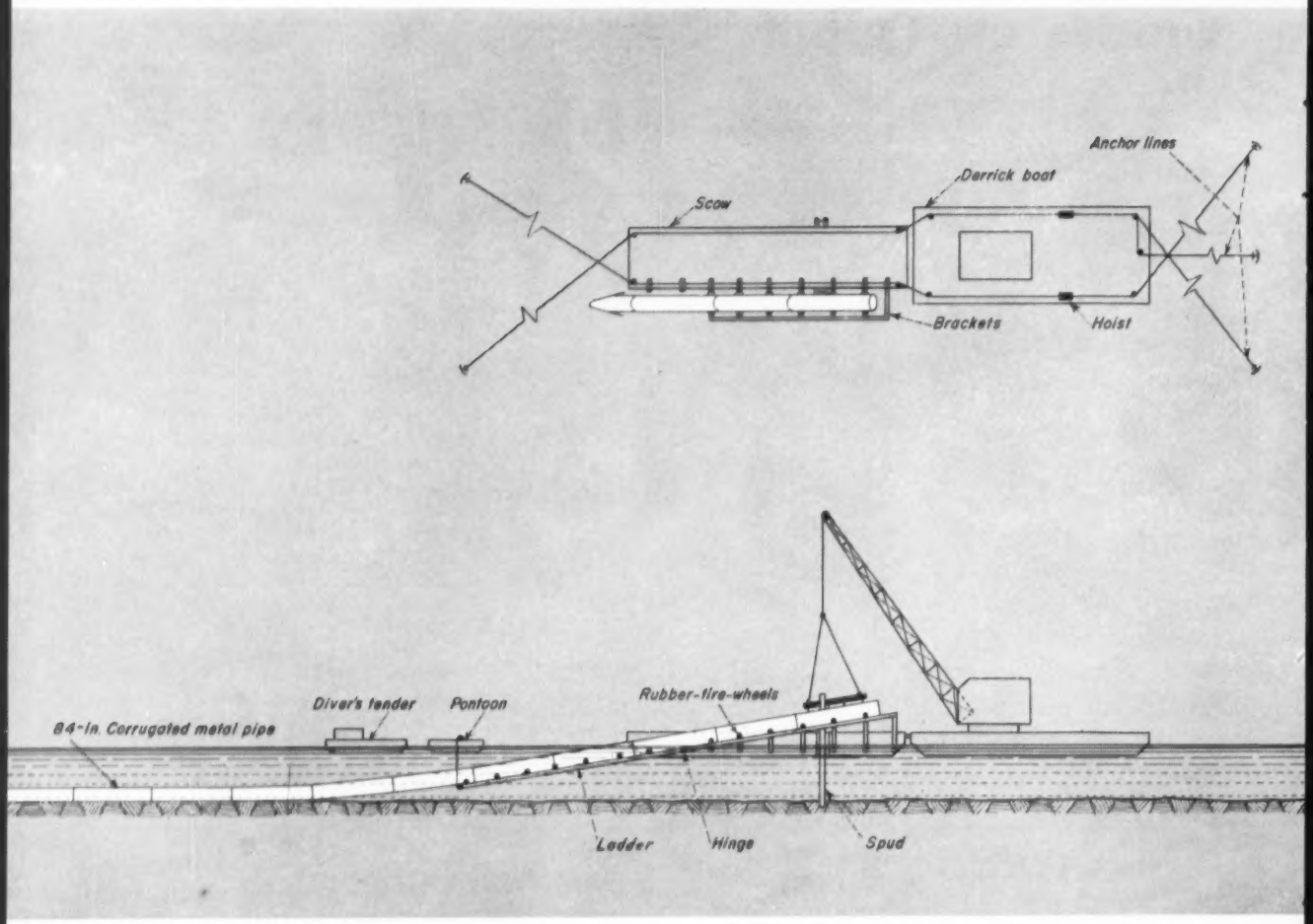
All Transcretes have the same CMC job-tested, time proven BIG VALUE features that guarantee FASTER charging – MORE THORO mixing – QUICKER discharge. These include: (1) Hopper that "Swings In" for charging, "Swings Out" for discharge. (2) Trouble-free Floating Drive.

Sizes to 7-yard mixing capacity. Write for details.

Take this first step to BIGGER READY-MIX PROFITS! Write for

2 FREE Transcrete Bulletins

CONSTRUCTION MACHINERY CO., Waterloo, Iowa



SCHEMATIC shows how hinged ladder of floating slide supports pipeline underwater as it rolls to bay bottom. Scow and derrick boat are winched ahead by five lines.

Floating Slide Quickly Lays Corrugated Metal Outfall

LARGE DIAMETER corrugated metal pipe has passed one of its biggest tests. It now can be laid underwater—quickly, easily, and economically. How? By paying it off a floating slide—as if it were a submarine cable.

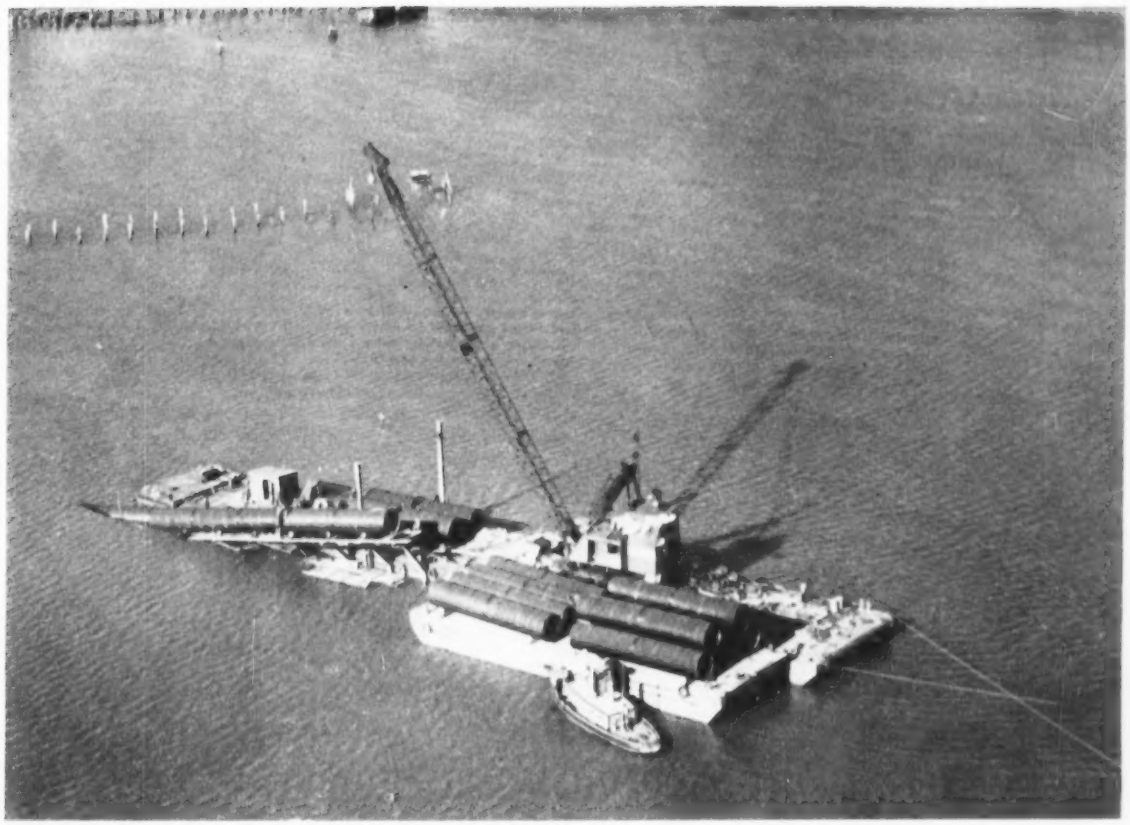
A good deal of credit for proving the new method goes to J. Rich Steers, Inc., ingenious New York contractor. Steers had the job of laying an 84-in. outfall into New Jersey's Raritan Bay, and considering the newness of the venture, he did it with ease. In fact, even though water was as deep as 38 ft, the 6,500-ft line was placed in only 31 days.

Basically, the operation was simple. A 200-ft slide hung from the side of a scow served as assembly stage for 40-ft lengths of Armco pipe and also guided the assembled pipeline into a prepared trench. Each time a length was added to the line, the scow was winched ahead, the pipeline made a slide, a new length was added, and the operation repeated. When crews became experienced at the job, they laid as much as 360 ft in an 11-hr day.

While this was not the first application of corrugated metal subaqueous pipe, it was by far the biggest, longest, and most spectacular. Smaller pipelines have been floated intact and sunk in place, but this was the first time that the submarine cable-laying method was employed.

The subaqueous line was part of Steers' $3.5 million contract with the Middlesex County Sewerage Authority calling for the construction of a 17,500-ft outfall. His bid was $800,000 lower than a concrete alternate, and almost all of this differential was in the subaqueous section. The main reasons were the expense of driving support piling and also the difficulty of making underwater joints.

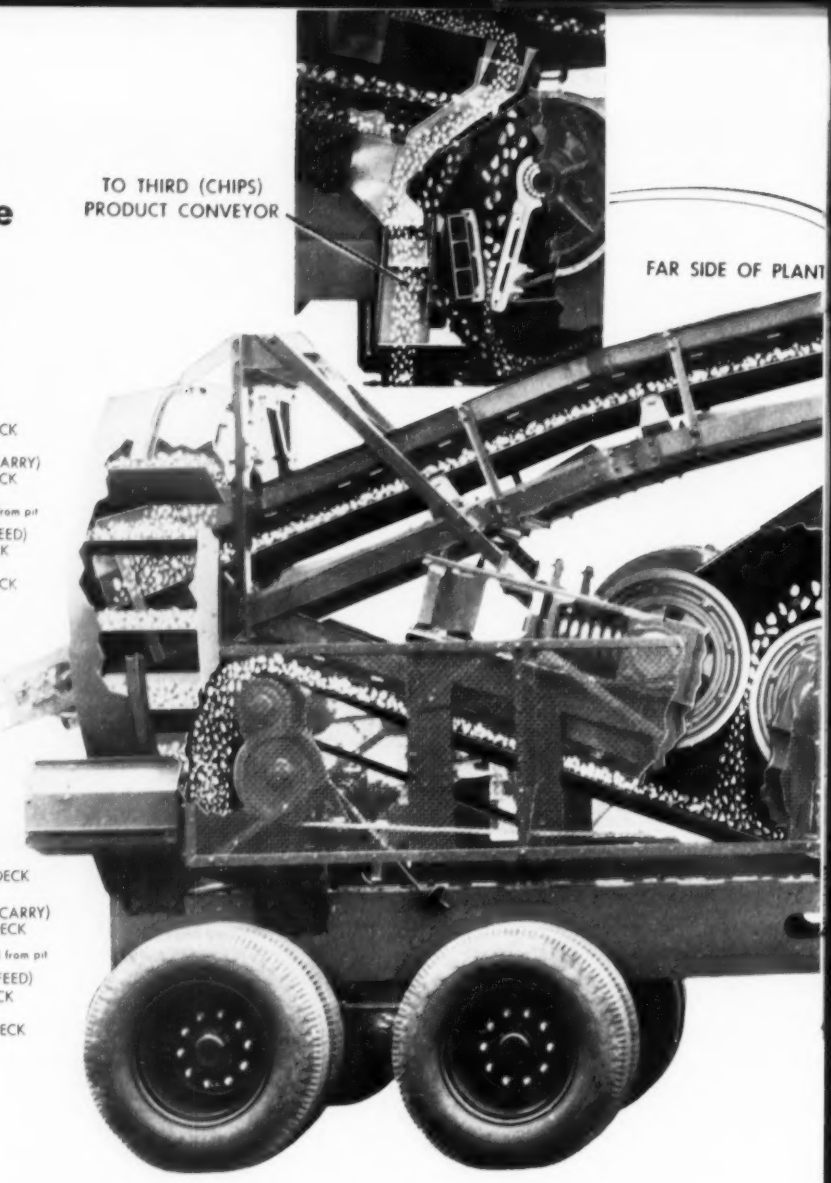
continued on page 160



FLOATING ASSEMBLY consists of slide-scow lashed to derrick boat. Whirler swings 40-ft lengths of Armco pipe to slide where they are bolted to pipeline.

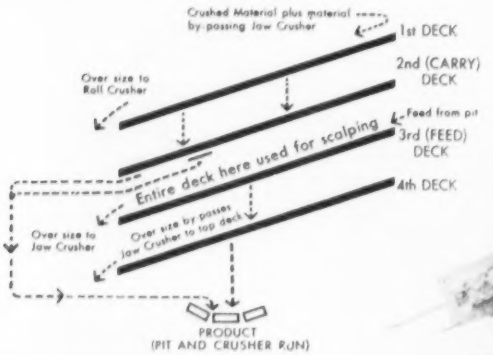
PIPELINE follows 2-on-12 slope as it enters water. Survey pole mounted on top of pipe helps transitman on shore tower to direct accurate placing of outfall.

Now you can produce up to 4 sizes of graded material at the same time ...*from a single plant*



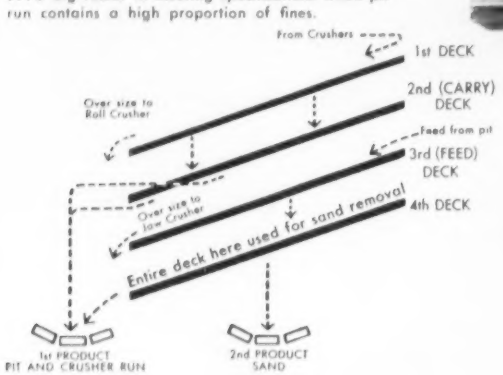
FULL DECK SCALPING CAPACITY

By using a full screen deck for scalping, pit run material that can be handled by the roll crusher is by-passed around jaw. Thus you get *full* use from each crusher.


Crushed Material plus material by-passing Jaw Crusher
1st DECK
2nd (CARRY) DECK
Over size to Roll Crusher
Feed from pit
3rd (FEED) DECK
Entire deck here used for scalping
4th DECK
Over size to Jaw Crusher
Over size by-passes Jaw Crusher to top deck
PRODUCT (PIT AND CRUSHER RUN)

FULL DECK SAND REMOVAL

A full screen deck can be used for sand removal ... a big factor in meeting specifications when pit run contains a high proportion of fines.



New multiple-production plant has king-size 4-deck screen for greater output, flexibility

PRODUCTION INCREASED EVEN MORE BECAUSE SMALLER ROCK BY-PASSES THE JAW CRUSHER

Here's the new king of portable crushing plants ... a plant able to turn out 4 different sizes of material at the same time ... *and with greater capacity than any other portable plant you can buy!*

These are strong statements, but field reports on performance of the new PIONEER 44-45 Plant series substantiate every word.

How crusher capacity was increased. These new giant-capacity plants have large capacity units. The 4' x 12' 4-deck vibrating screen is the largest used on any portable plant. The big 1036 jaw crusher and large roll crusher (3024 on the 44V and 4022 on the 45V) give plenty of crushing capacity.

But even more important is the high efficiency of the plant. For example, pit run material which can be handled by the roll crusher may be by-passed around the jaw *by using part or all the third deck as a scalping screen.*

Thus, jaw and roll crushers can be used 100% for crushing. Furthermore, the operator can equalize the load between crushers by adjusting the jaw setting while plant is in operation.

Even though the nature of pit run varies from time to time, the operator can thus keep each crusher working at full capacity ... without even leaving his platform or stopping the plant.

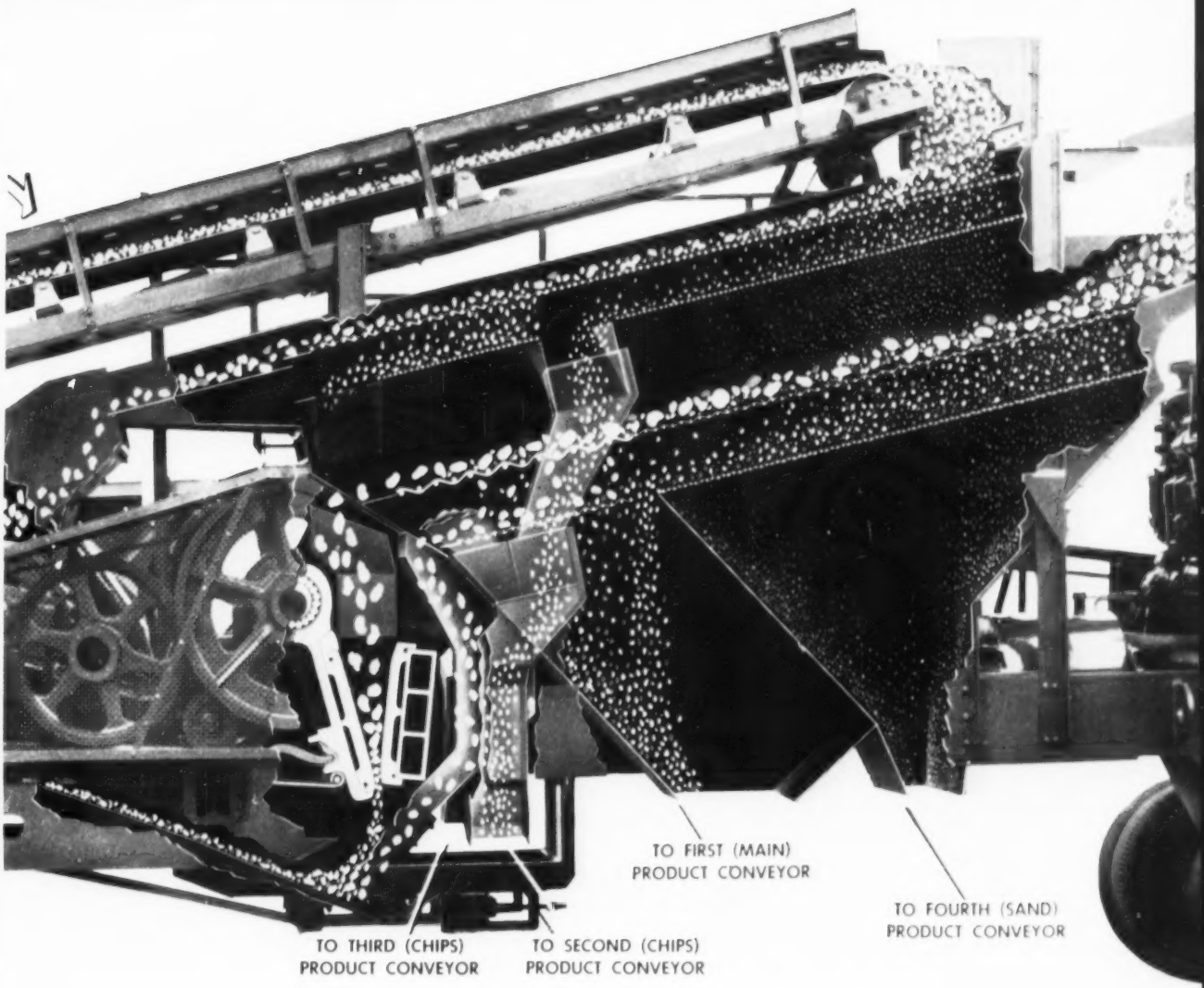
How effective screening area was doubled. Pit run is fed to the *third* deck and material from crushers is screened on top decks. Because first and second decks are available for sizing material from the crushers, these new plants *give double the effective screening area* found in any other popular make plant.

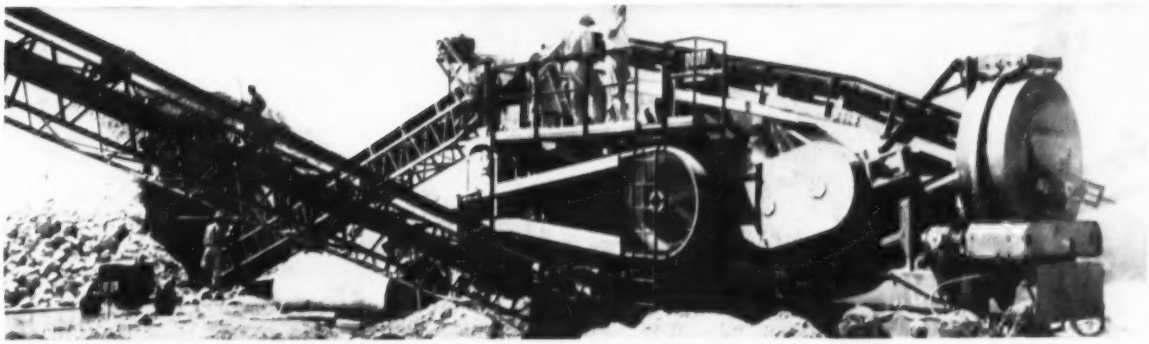
A full sand screening deck is provided for quick sand removal if the pit run has a high proportion of fines.

Produces 4 sizes of aggregates at same time. With their 4-deck screen, unique spouting arrangement, and ingenious method of routing material, these PIONEER Plants can produce up to 4 different sizes of material at the same time with close control of gradation.

Actually, 2 different sizes of fractured chips can be produced simultaneously without addition of extra equipment. Further, the chute-and-hopper arrangement makes it easy to either blend crushed material with pit run or remove each product separately.

Nine basic screen set-ups. With 9 basic screen arrangements to choose from, the operator is generally able to meet





the most exacting aggregates specifications regardless of pit conditions.

New screen suspension absorbs vibration. Instead of being mounted rigidly on its base in the usual manner, the big 4-deck screen floats on a dual set of heavy coiled springs mounted at each corner of the main screen frame.

This new and exclusive PIONEER feature avoids transferring vibration to the supporting structure and also increases screening efficiency.

Meets weight, height, width, limits. With an approximate equalizer loading of 34,000 lbs., plants will comply with most highway load limits.

Travel length is only 32'3", width 9'6". Travel height is approximately 13', operating height 14'8".

44 and 45 Series Plants are available with either mechanical or electric drives except that jaw and roll crushers are always mechanically driven.

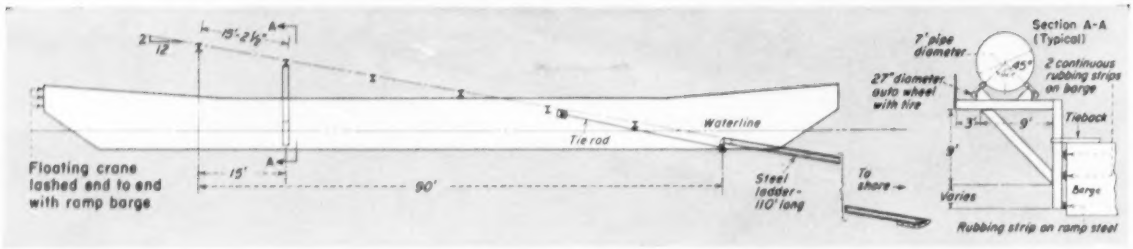
Typical performance report: Near Yuma, Arizona, Arrow Construction Company's 44V (shown above) is producing road materials at a 435 tph clip. 350 tph consists of 1½" to 3" aggregates for base course, 9 tph of ⅜" to No. 10, and 75 tph sand.

Walter Norton, the owner, compares his new 44V with previous plants and reports, "In our opinion the PIONEER 44V *is the best portable plant* ever built".

If you, too, wish to lower your cost-per-hour of producing aggregates, it will pay you to see your PIONEER Distributor or write Pioneer Engineering, Division of Poor & Company, Inc., Minneapolis 14, Minnesota.

Pioneer
ENGINEERING
Division of Poor & Company, Inc.
MINNEAPOLIS 14, MINNESOTA

FLOATING SLIIDE . . . continued from page 157



BRACKETS hung on side of scow support slide. Welded to deck with tie-backs, they each mount pair of wheels on which pipe rolls. Normally, center of scow is cut out to make slide. But hanging it on side does no damage and permits easy dismantling.

RUBBER-TIRED WHEELS set at 45 deg angles allow pipe to roll easily when scow is winched ahead. Joints are made with 44 high-strength bolts and 22 standard bolts interspersed around pipe. They are driven with electric impact wrenches.

Steers subbed the 10,690-ft landward section, which was later changed to concrete because of the deep cuts required, and tackled the 6,500-ft sub-aqueous section with his own forces. But it took a lot of experimenting before he arrived at his floating-slide method. His original plan was to assemble on shore 20-ft sections of pipe into 120-ft lengths, haul them out, and join them underwater with divers. But the hoop-band-gasket joint was too complicated to make even on land, and Steers abandoned the idea.

Instead, he received approval to substitute a bolted split-lapped joint that was not only easier to make but also extremely strong. It made possible the floating slide method because the assembled pipeline was strong enough to withstand bending as it rolled into the trench.

Building the Slide

Next problem was to build the slide. Normally, contractors laying preassembled pipe cut a slot into a scow on which they build a slide. But Steers was reluctant to do major revamping for only one job. So, he hung the slide on the side of a scow. Removable steel brackets were spaced every 15 ft, welded to the top of the scow and allowed to rub against the side. On top of each bracket was mounted a pair of rubber-tired wheels, fixed at 45-deg angles so that the corrugated pipeline could roll.

The slide was made in two sections. Above water, a 106-ft length hung in a fixed slope along the side of the scow. Its end was hinged to a 110-ft ladder, also fitted with wheels.

The slide served several purposes. It provided an assembly stage, supported the pipeline above and underwater, and guided it into the trench. Because of tide and varying grade of bay bottom, supporting the pipeline was tricky. The length of line stretching from the point where it left the ladder to the point where it was supported in the trench was critical. If it went much over 100 ft, there was danger of rupturing the line.

To support the pipe as much as possible while maintaining a smooth bending curve required built-in flexibility of the floating assembly. If the pipeline began to leave the ladder too soon, a pontoon connected by cables would be pumped out to raise the ladder. At other times, it was necessary to adjust the ballast in the scow itself to effect a smoother curve of support under the pipeline. In fact, pumps could quickly adjust its draft up to 5 ft.

continued on page 163

Thermoid helps assure performance of versatile "SPREAD-MASTER"

In surfacing roads or airport runways, this self-propelled Power Spreader, produced by Flaherty Mfg. Co. of Pocatello, Idaho, applies as much as 150 tons of abrasive aggregate an hour! Because continuous uniform conveyor operation is a must to prevent seams or streaks, Flaherty chooses Thermoid Conveyor Belting.

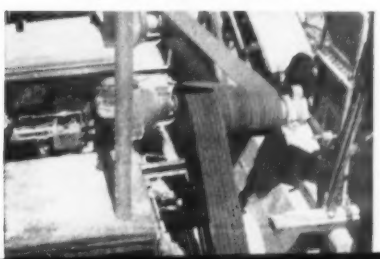
The two 20″ belt conveyors are equipped with tough, durable Thermoid 4-ply Belting, specially selected for the work to be done.

There's a Thermoid Belt for every type of material handling problem. Because each belt is specifically designed for the job—you're assured longer wear, less downtime, fewer replacements.

Thermoid

Thermoid Company
Trenton, New Jersey
Nephi, Utah

Make Thermoid your choice, too, for Multi-V Belts . . .



. . . and Hose manufactured with your needs in mind

Your Thermoid Distributor can help you select the right Conveyor Belt, Hose and Multi-V Belts to lower your operating costs.

GOLDEN POWERline WHEELERS

Name your job . . . then pick the Minneapolis-Moline Wheeler that does it *best*! Six powerful MM Wheelers of the Golden Powerline give you a range of 38 to 78 engine brake horsepower, with the speed, the handling ease, and the versatility for every job from digging or loading to heavy drawbar pulls.

Demand features like these:

NEW POWER: New, big-displacement, high-compression engines.

RUGGED STRENGTH: Heavy transmissions and final drives.

POWER STEERING: Completely new MM built-in hydraulic power steering.

SPEED: Ampli-Torc 12-speed transmissions on the go in any gear.

UNIT DESIGN: Built-in, direct-drive hydraulic pumps in wide range of sizes.

VERSATILITY: Hydraulic controlled 3-point hitch systems fit all standard equipment.

MORE TOOLS—MORE JOBS: Full selection of industrial equipment.

DEALERS: A complete new line . . . the MM Golden POWERline . . . backed by MM's enviable reputation and packed with new important features invites your investigation. Write today to:

MINNEAPOLIS-MOLINE

INDUSTRIAL POWER DIVISION • MINNEAPOLIS 1, MINNESOTA

PIPE SECTION 40 ft long is lowered to top of slide for bolting. Section is handled with strongback at four pickup points. Cold mastic is applied to joint on inside.

ALIGNMENT directions are received from shore transitman over Vocaline radio.

Above water, 40-ft sections were swung by crane from supply barge to slide. Once the ends were lapped at the joint, a crew began placing the 68 bolts. To assure a strong joint, forty-four ½-in. high strength bolts and twenty-two ⅜-in. standard bolts were interspersed uniformly around the pipe. Ingersoll - Rand electric impact wrenches turned up the nuts.

When all bolts were tightened, a mastic was applied cold to the inside and hot to the outside of the joint, and the pipeline was ready to be moved down the slide.

To advance the slide, the scow and derrick boat, coupled end to end, were winched ahead by five anchor lines. Controlled from two steam deck engines on the derrick boat, four lines crisscrossed from opposite ends of the floating assembly, providing close control over its alignment. A single line was anchored straight ahead.

Directions for operating the four crisscross lines came from a transit man stationed on a survey tower erected on shore at the water's edge. When the floating assembly moved, he sighted directly on the slide, quickly determined what lines had to be adjusted, and gave his signals. Instead of the conventional method of advancing the survey tower into the bay so that crews could see the transitman's signals, the contractor equipped the survey tower with a simple Vocaline two-way radio. The inexpensive unit has a range up to six miles, if there are no obstructions. The radio system worked smoothly during the entire operation.

Each time the floating assembly completed an advance, two spuds mounted on the scow were sunk into the bay bottom to hold the slide in position.

Every two or three days anchors had to be shifted. It was a simple operation, because a complete group of anchors had been left in place earlier by the dredge that prepared the trench. Later, the same anchors were used again when the backfilling rig passed over the pipeline.

Under the Pipeline

Laying the continuous pipeline underwater to exact grade presented some tricky problems. Even though the dredged trench with its 4-ft cushion of sand was fairly close to grade, adjustments of a foot or two were common. In most cases, the bed was low, and divers had to raise the grade every 40 ft. with sandbags. If it was too high, they waited until the pipe landed and then jetted it to grade.

To determine the existing trench grade at any given location, soundings were taken from the pontoon to the trench on both sides of the pipe. Knowing the design elevation at that point, crews could quickly determine the amount of cut or fill. To anchor the pipe in the trench, it was chocked with sand bags.

At the end of the 6,500-ft outfall, the pipe branches into an H-shaped dispersion unit made mostly of 42-in. pipe. Steers fabricated the unit in three 40-ton sections, placed them with derricks, and made three underwater joints.

Although the rest of the pipeline was backfilled with sand, the dispersion unit had to be covered with bags of lightweight concrete because the engineers felt that sand backfill could clog the dispersing units. The concrete-bag covering was extended back along the main pipeline for a length of 165 ft.

Specs required that the bags provide a minimum cover of 2 ft above the pipe. On the sides, they

continued on page 166

Big production: at the Camp Dennison, Ohio, plant, a 2¾-yd. Michigan loads out a heaping bucket load of frozen aggregate. Power-shift transmission is standard equipment—cuts seconds off every cycle between truck and pile

$76,000* buys *one* 2¼-yd. truck crane or *four* 2¾-yd. Michigan Tractor Shovels . . .

Here's why this Ohio firm bought the four Michigans

Ohio Gravel Company operates five plants around the perimeter of Cincinnati. Until a short time ago, ½-yd. and ¾-yd. clamshells and shovels handled all loading from stockpiles. When it became apparent that the Miami plant (300 t.p.h. capacity) did not have adequate loading capacity, Ohio Gravel asked for bids on a special 2¼-yd. mobile crane. According to Walter Flach, V. P. Production, they recognized the need for bigger bucket capacity and better mobility between stockpiles. Bids on the crane ran from $65,000 to $76,000—a substantial price to pay for increased capacity in *only one of the five plants.*

Had to leave the demonstrator

At this point Bode-Finn Co., the local Michigan distributor, got permission to demonstrate a 2¾-yd. Michigan Tractor Shovel at the Miami plant. The "demonstration" lasted two weeks—that is, Ralph Hautman (Miami superintendent) wouldn't

*Current list price F.O.B. factory for four 2¾-yd. gasoline Michigan Tractor Shovels.

(Advertisement)

let them take the demonstrator away until a permanent machine was delivered. Before the new Michigan even arrived, Ohio Gravel Company bought three more for other plants. *The total cost of the four Michigans was approximately the same as the one crane.*

Loads as much as two cranes

At the four plants with Michigans, the superintendents agree that one Michigan loads trucks as fast or faster than two ¾-yd. clamshells. With widely separated stockpiles, the Michigans move around the yards as fast as the incoming trucks—24 mph top speed. They consistently get heaping bucket-loads. Power-shifted cycles between pile and truck average about 40 seconds; it takes 4 minutes or 6 bucket-loads to put 19 tons into a dump trailer (see picture).

A typical heaping bucket-load of graded bank run comes up well over the 2¾-yd. rated bucket capacity. Digging bank run, the Michigan handles approximately 5½ tons per bucket-load.

Handling clean-up work in its spare time, the Michigan eliminates stockpile contamination. Unlike the clamshells which formerly handled the job, the Michigan does not pick up dirt as it cleans up around the piles.

More profits for producer and trucker

Faster travel, faster cycles, bigger bucket-loads obviously make more profits for producer and trucker alike. Ohio Gravel Company recognized this fact when the first Michigan was demonstrated. Your own Michigan distributor will give you this same kind of proof. A chance to demonstrate is all he asks—*you name the job.*

Michigan is a registered trade mark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 18, Michigan

It took four minutes to put 19 tons of material into this dump trailer. Six bucket loads filled it. Note that the 2¾-yd. Michigan has plenty of dumping clearance over the 10-ft. high side boards. Even with batch boards in place, the Michigan has no trouble.

FLOATING SLIDE...

continued from page 163

are built up from the trench on a one-on-two slope.

Placing Bags

Steers developed a system of placing bags which more than doubled normal production on this type operation. In fact, with only two divers working at a time, he placed an average of 800 bags per 8-hr day.

Normally, concrete is batched and mixed on deck, and poured into bags. Fitted with a wire loop, they are dropped along a cable which guides them to the bottom of the bay. Here, the diver must remove the loop and carry the bag to its position.

But Steers streamlined the operation. His experiments convinced the engineers that bags of dry-batched concrete made with high early strength cement will hydrate underwater to form the required 2,000-psi strength at seven days. This change eliminated a complicated floating mixing plant and allowed him to handle pallets of bags of dry pre-mixed concrete.

Placing was also streamlined. Steers hung a 30-in. pipe from the derrick boat and dumped bags into it with a portable conveyor. In many areas, divers could place bags directly with the pipe. By means of telephone, they could direct the derrick operation to hang the pipe just where they wanted it so that bags simply dropped in place.

Generally, divers built up bags along a 10-ft strip on one side of the pipe. Then they switched to the opposite side, and finally covered the top. Clever manipulation of the pipe greatly reduced the amount of hand work.

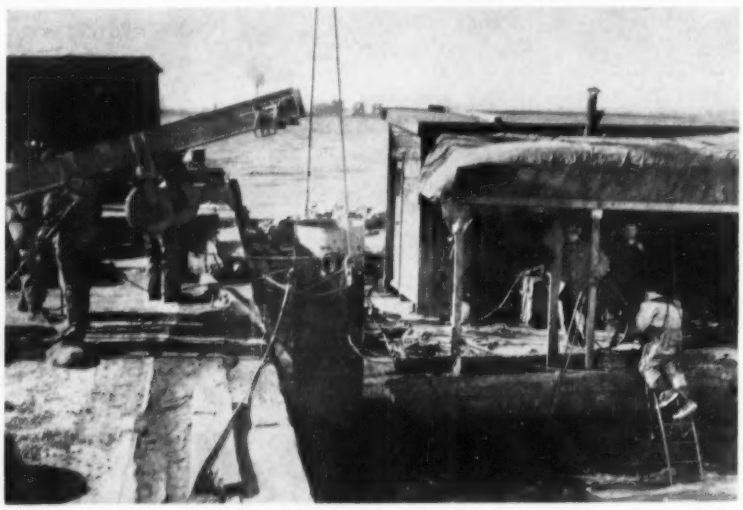
Personnel

Credit for developing the successful pipe-placing scheme goes to Eugene Rau, chief engineer, Arnold Thurber, assistant chief engineer, Jack Malcolm, general superintendent, and Brick Miles and Gil White, superintendents for J. Rich Steers.

Consulting engineers, Metcalf & Eddy, Boston, were represented by A. A. Thomas, resident engineer, and E. S. Chase and J. S. Bethel, partners in charge. Sol Seid is chief engineer of the Middlesex County Sewerage Authority, which is headed by Chester Lydecker, executive director.

Divers Cover Pipe With Concrete Bags

BAG of dry-mixed Lelite lightweight concrete is placed on Con-Vay-It portable belt conveyor which discharges over top of 30-in. pipe. Bag weighs only 92 lb.



LONG PIPE hung from derrick carries bags 35 ft below water where they are positioned by pair of divers. Standing on ladder, diver takes time out for smoke.

DERRICK BOAT lashed to scow positions pipe wherever divers direct. Cover over dispersion unit requires 35,000 bags. Two divers working at a time place 800 bags a day.

A frequently-seen Michigan Tractor Dozer application: push-loading scrapers. Owner: Dalon Contracting Co., Atlanta.

Be sure to check before you buy

which dozer gives you the most

SPEED . . . Michigan Model 180 Tractor Dozer has a top of 30 mph forward, 30 mph reverse.

TRACTION . . . of all rubber-tire dozers, only Michigan has full traction when turning. You *steer* around turns, don't wear out tires by dragging or braking inside wheels.

TRACTION IN SOFT GOING . . . of all rubber-tire dozers, only Michigan has a front-axle no-spin differential. Wheel on poorer footing automatically slows down; power goes to other wheel.

EFFICIENT POWER FLOW . . . of all tractors, only Michigan has a power train completely designed and built by one manufacturer (Clark). This power train design has been so effective it has been used without any basic change in the over 6,000 Michigan Tractor Shovels and Dozers now in the field.

EASY OPERATION . . . to change speed or direction of a Michigan, simply flick small steering-post lever. No time or momentum lost for clutching. New operators easy to train.

VERSATILE BLADE . . . from seat, operator can pivot blade through 35 degree arc *under pressure* to uproot stumps, dig or float.

MECHANICAL EFFICIENCY . . . all Michigans have planetary wheel axles which reduce axle strains 70% . . . 3-to-1 torque converters which eliminate shock loads . . . power-shift transmissions . . . simple job-proved hydraulic controls . . . thus stay on the job and out of your shop. *Ask any Michigan owner to compare its mechanical efficiency record with other tractors he has now, or has had.* Particularly compare it with other big rubber-tire tractors.

LOWEST PRICE . . . fully-equipped Michigan Tractor Dozer costs about $6,500 less than other big rubber-tire dozers. Power-shift transmission, torque converter, planetary wheel axles, down-pressure blade, swinging drawbar all standard . . . to get top efficiency you need no "extras". Wide variety of purchase plans . . . including no-money-down, pay-as-you-profit lease-purchase.

Ask us for details before you buy *any* dozer. Rubber or tracks, we welcome your test and comparison.

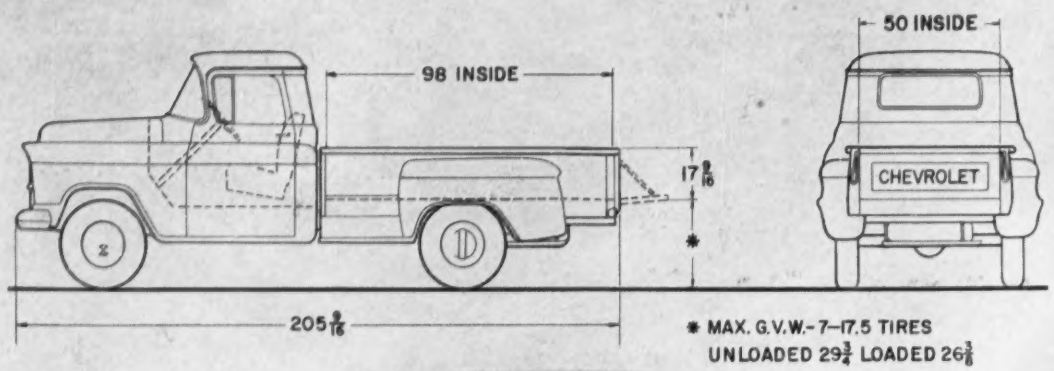
Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 17, Michigan

CLARK® EQUIPMENT

Pick a practical pickup!

Check the size of a 1957 Chevy Pickup body for evidence of practical design. The box of the new long-wheelbase ½-ton Pickup is a full 98" long—currently the longest ½-ton Pickup body size you can get!



This big built-for-work "box" makes CHEVY first choice in Pickups!

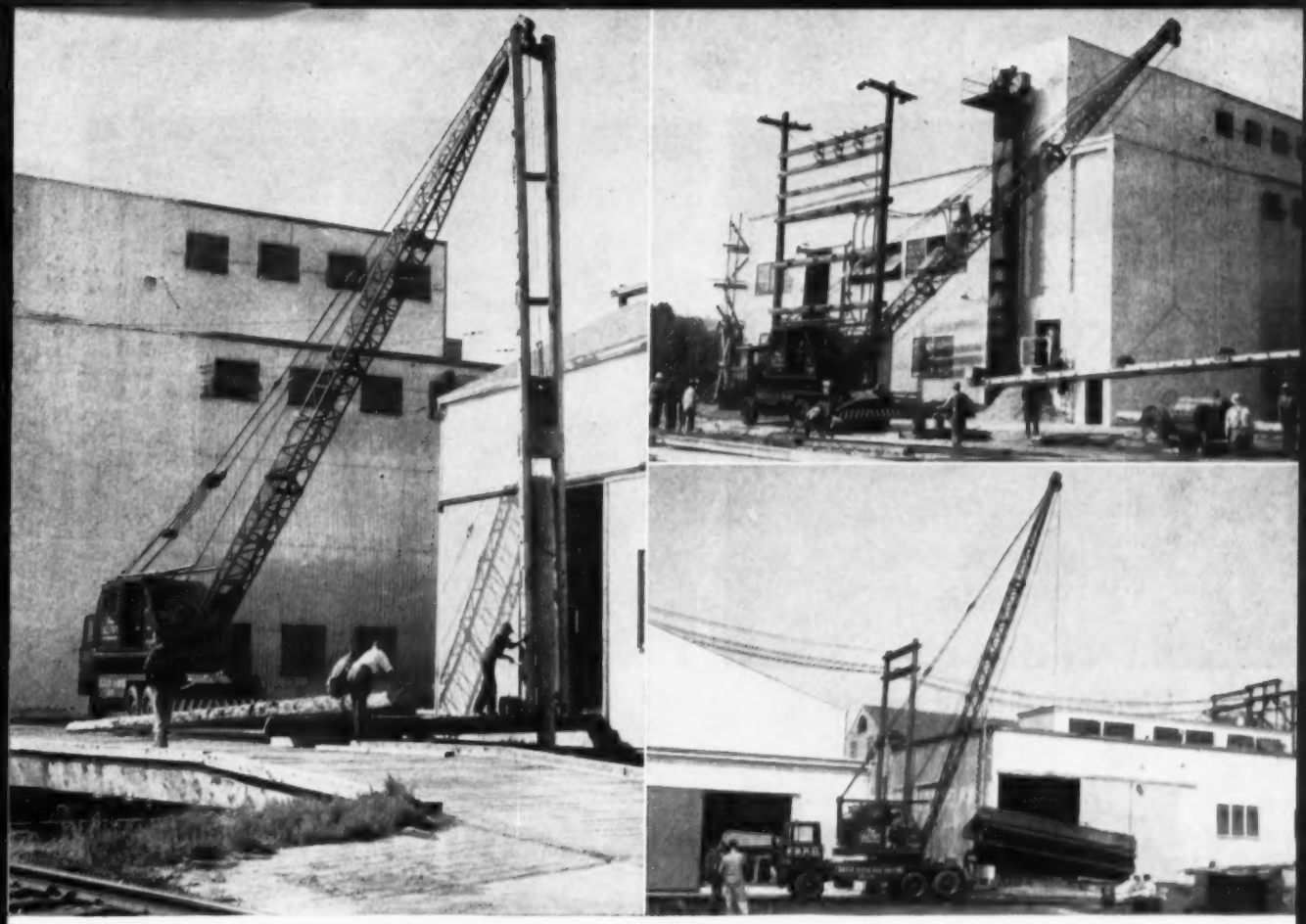
These best selling '57 Chevrolet Pickups are practical trucks in every respect. They offer modern power to keep your costs down low, modern looks to keep your prestige up high... and all these modern body advantages to help you make light work of tough jobs!

They're the most practical and profitable Pickups going! For example, they enable you to load more easily and quickly, thanks to *low* loading height and steel skid strips in the long-lasting hardwood floor. And for your bulkiest loads, stake pockets accommodate the addition of racks or side boards. Other modern advantages include extra hauling space provided by *outboard wheel housings* . . . a grain-tight tailgate with anti-rattle latch that strengthens the sides . . . and practical level-ledge side panels. Chevy gives you running boards, too, for convenient side loading. These new Pickups come in a wide range of ½-, ¾- and 1-ton models with spacious boxes ranging up to more than 9 feet in length. See your Chevrolet dealer for the one that suits your job. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

'57 CHEVROLET TASK·FORCE TRUCKS

PROVED ON THE ALCAN HIGHWAY . . . CHAMPS OF EVERY WEIGHT CLASS

CHEVROLET



Lifting, pile-driving, cleanup . . . Canadian company's

Versatile Michigan 15-ton Truck Crane handles entire railroad trestle project ——*ALONE !*

Michigan cranes are nothing new to Fraser River Pile Driving Company, Ltd. (New Westminster, British Columbia)—they've owned eight of them. Still, there's something pretty special about being able to say "Send a Michigan" . . . knowing this *one machine alone* can handle a crane or shovel job quickly, efficiently, *profitably*. A case in point is the railroad trestle Fraser built recently for Pacific Veneer Division of Canadian Forest Products, Limited.

Drives to job at traffic speeds

To get work started with minimum delay, Fraser's 15-ton Michigan truck crane was driven in to the job over main highways. Unit was light and narrow enough to need no highway permit. Its first assignment was pile driving. A 35-foot tower was assembled to the boom end and raised into position; a 3600-pound hammer slammed dozens of pilings into place. Michigan's maneuverability really shone here, for it carried—and placed—all trestle timber and sections of pre-built bridge flooring, *as well as* the big pilings. And to finish matters, they later put a clamshell on the Michigan and cleaned up underneath the finished trestle.

"Very pleased with our 8 Michigans" says owner

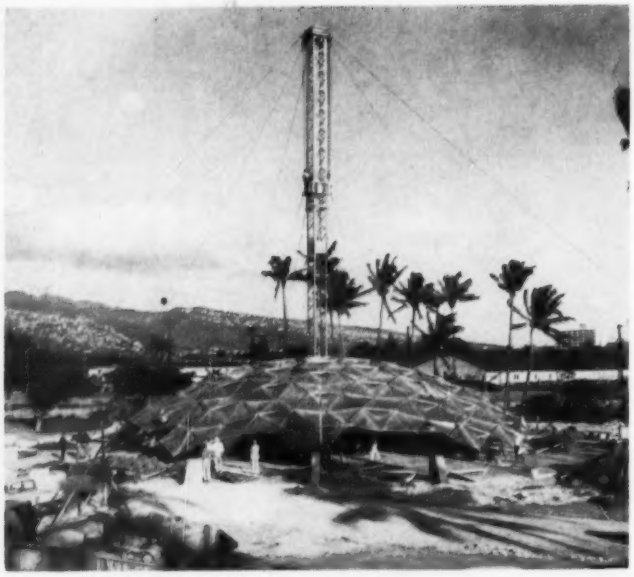
It's easy to see why Fraser River Pile Driving Company has been "very pleased" with the performance of their eight Michigan Cranes. Chances are, rugged, versatile drive-anywhere units like these could cut *your* equipment headaches, too. Your local Michigan Distributor will be glad to work with you. No obligation, naturally. Or write direct to us for detailed specifications.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 12, Michigan

CLARK® EQUIPMENT

Diamond-shaped panels...



...are bolted together...

Frameless Aluminum Dome

A 145-FT DIA DOME made of bolted aluminum panels was erected in Honolulu, Hawaii, in record time.

It took one day to set up an erection mast, another day to unload and lay out panels, two days to assemble and raise the dome, a fifth day to anchor it to concrete piers, and one final day to dismantle and remove the mast. Actual assembly and hoisting of the dome was completed in only two 10-hr shifts. Top crew was 38.

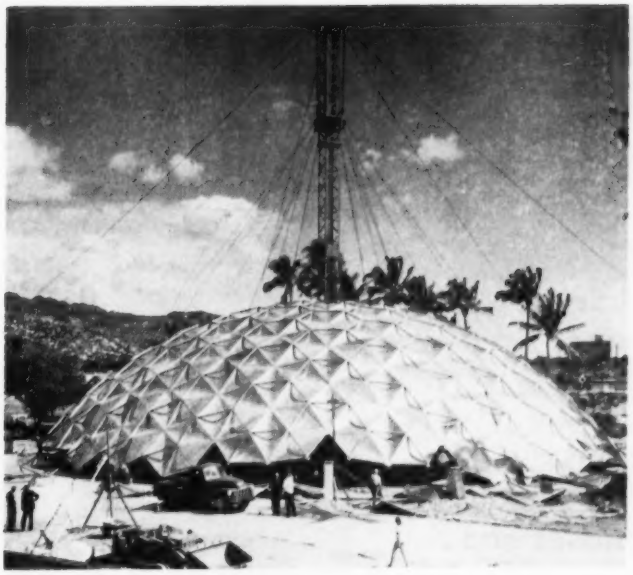
Thin Panels

The 50-ft high dome, weighing only 39,000 lb, is made of 575 diamond-shaped panels slightly more than 1/16 in. thick. Each panel curves inward, and its short diagonal is strengthened with an aluminum strut. Fabricated in 10 different sizes, each panel has a 3¼-in. flange around the edge for bolting to adjoining units.

The dome will house a modern auditorium with a seating capacity of more than 1,800.

Erection was extremely fast for such a large structure. Once the 25 concrete piers around the floor circumference were completed, Terminal Steel Co. of Honolulu moved in and erected the 96-ft guyed mast at the center of the job.

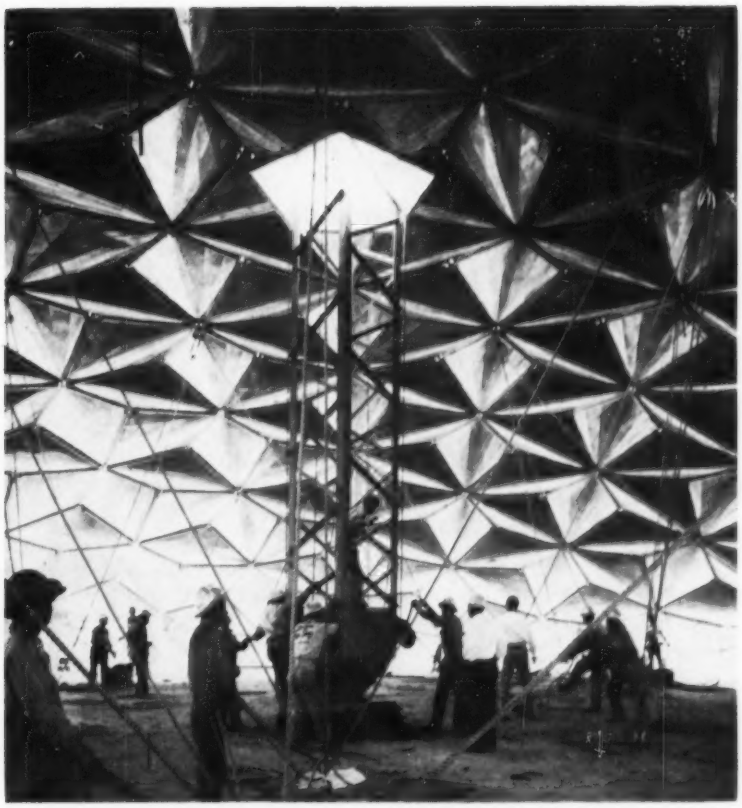
TRUCK CRANE erects 96-ft erection mast. Base of mast rides on cart as top is raised. Note mast's sliding collar from which hoisting cables will radiate to dome surface.



...as erection mast...

...raises 145-ft shell

Erected in Two Shifts



HAND WINCHES at base of mast take up on vertical lines to raise huge dome. Underside rope lines are kept taut to resist excessive uplift in case of high winds.

Panels were unloaded from trucks and laid out in neat piles around the site. They were color coded for efficient handling.

Assembly

To assemble the first circle of panels, timber support cribbing was built up around the base of the mast. Panels were laid on top and joined along their edges with aluminum lock bolts. Three panel corners were joined with aluminum hub castings, and, where six panels converged, a star-shaped casting was used.

As panels were added, the dome was raised progressively by a sliding collar on the mast. Hand winches at the base of the mast pulled on lines reeved through pulleys at the top of the mast to raise the collar. And from the collar, circles of lines radiated to pickup points on the dome. Additional underside lines were maintained to hold down the dome in case of high winds.

When fully assembled, the dome was set on to the concrete piers and anchored by aluminum struts. It settled only ¾ in.

The dome was designed and fabricated by Kaiser Aluminum & Chemical Corp., Oakland, Calif.

continued on page 174

New SUPERIOR Heavy-Duty SCREED SUPPORTS

Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment

ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King St., Franklin Park, Ill. *(A Suburb of Chicago)*

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

A-W Crushing Plant of J. J. Cronin Co., showing primary crusher at extreme left. Washer is in center of photo. Washed sand is delivered by the conveyor on left of washer, specification material by the three stock-piling conveyors at the right.

AUSTIN-WESTERN Crushing Plant giving high-speed production for J. J. Cronin Co., North Reading, Mass.

John Cronin reports: "We spent more than a month checking all makes before we purchased our Austin-Western plant in April, 1954. Since then, we have had every reason to be pleased with our decision. Production is fast, and we have very little downtime, as a result of the excellent engineering and rugged construction of the equipment. Present production includes: concrete sand and specification material in ½, ¾ and 1½ in. sizes."

In this operation, raw feed is delivered to a 36-in. feeder-grizzly combination and passes into the primary crusher, which has a jaw of 20 x 36 in. This is V-belt driven by a 75 hp slip-ring motor. The material is then conveyed to a 4 x 12 ft. single-deck screen. Larger sizes pass into a cone crusher, which is V-belt driven by a 60 hp slip-ring motor. The washer is a 4 x 16 ft., 3-deck screen type, equipped with spray pipes. A single convenient push button station controls the entire closed-circuit system.

It will pay you to compare Austin-Western design and construction features before you invest in a crushing and screening plant. Each Austin-Western plant is designed to solve a particular production problem. Our engineers would welcome the opportunity to discuss your needs with you and to recommend the proper equipment.

See your nearby Austin-Western distributor today, or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

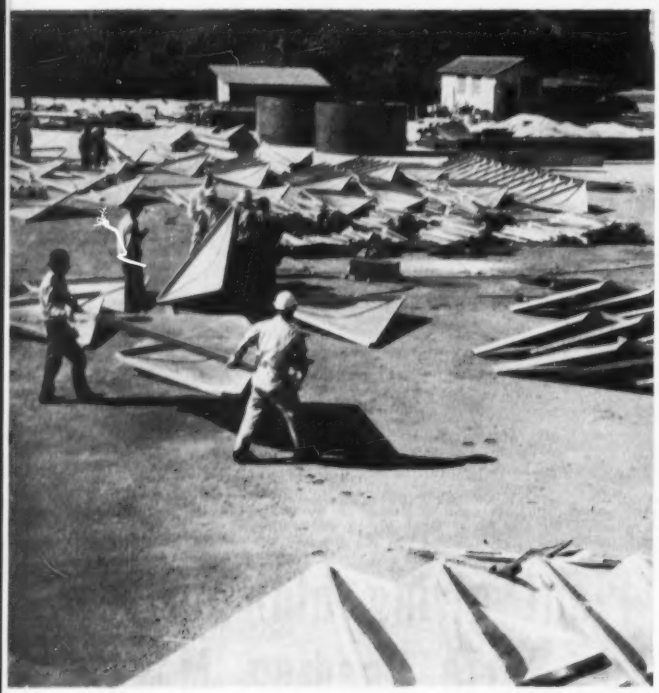
AUSTIN-WESTERN
CRUSHING, SCREENING AND WASHING EQUIPMENT

BALDWIN BLH LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation
Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

Lightweight Panels Assembled Fast by Hand

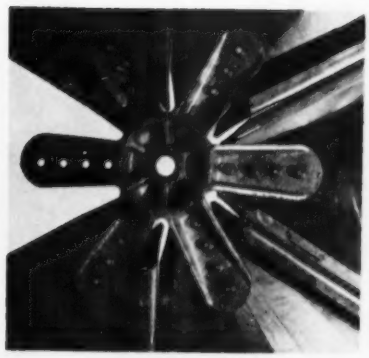


DIAMOND SHAPED PANELS carried by hand are laid out in neat piles around site and color coded for efficient handling.

FIRST CIRCLE of panels is bolted together on cribbing. Each panel has 12 bends to form unique pattern. There are 10 sizes.

ALUMINUM lock bolts fasten panels to each other and also to gusset plates. Hub and star-shaped plates join panel ends.

CONCRETE PIERS anchor dome with aluminum struts made of 2½-in. pipe and ranging from 130 to 147 in. long.



Aluminum Bolts Locked Quickly By Hydraulic Tool

A major share of the credit for the fast erection and sturdy construction of the aluminum dome goes to a fastening process new to the industry. Its key is a rivet type unit, the Huck lock bolt, which is driven by a hydraulic tool.

On the dome job, the bolt was inserted in a hole from above; a locking collar was slipped on from below, and the hydraulic tool pulled the bolt tight against the collar. Then it swaged the collar into grooves on the bolt, forming a strong leakproof joint. A reverse movement of the tool then fractured the bolt at a breakneck groove, the tool was removed, and the broken end of the bolt was ejected.

For the ¼-in. flange bolts, the tool had a ⅜-in. stroke and weighed only 7 lb. A larger tool with a ⅝-in. stroke drove the ⅜-in. bolts at gusset connections.

To make the dome leakproof, gusset casting holes were sealed with a disk of heavy aluminum foil cemented in place with Weatherban sealer, a Thickol base compound. Flange joints were caulked with the same material.

STAR-SHAPED gusset casting for joining ends of six panels is bolted with special tool having ⅝-in. stroke. Aluminum collar is swaged over grooves in bolt for tight fit.

HYDRAULIC TOOL drives ¼-in. lock bolt between flanges of adjacent panels. Portable pump delivers fluid at 3,000 psi.

How job site batching with supplier $920,000 contract of 5 stationary plants

On the southern outskirts of San Francisco above San Bruno is a 5000 acre hillside area of new subdivision and shopping center construction. 6 ready-mix suppliers were in position to bid on the contracts: 5 stationary plant operators and Cupertino Concrete Co., the one Noble-Mobile batching plant on wheels operator. Cupertino was able to take the job at a price 8% below the nearest competitor yet make a profit averaging 6%. By driving his Noble-Mobile to the job site and producing there, Cupertino reduced transit truck hauls to a maximum of 2 miles and saved over 50% on hauling costs. Each Cupertino transit truck works an average of 6 hours a day making up to 12 trips of 5 yards per trip, totaling 60 yards of concrete per day per truck. 60 yards supplied from the nearest competitive stationary plant would have required 2 to 3 trucks. Cupertino saves up to 8 transit trucks.

When the job started in August, 1954, Cupertino located the Noble-Mobile in the center of the first project so the maximum haul would be only 1 mile. On completion of that project and the beginning of another project 1.5 miles distant, Cupertino closed shop on a Friday night and by the following Monday morning had dismantled, moved and reassembled the Noble-Mobile in the new location and was delivering concrete. The cost of setting up the Noble-Mobile in the new location was a mere fraction of what it would have been to install a stationary plant. Saved were the weeks and even months wasted in cutting through legal red tape to secure permits and complete construction. A further source of profit is the do-it-yourself residents of the newly completed homes.

Batching plant on wheels driven to the job site saves erection costs, taxes, site availability problems. Purchase is easier to finance than stationary plants. Pays for itself in savings from shorter hauls. Saves outlay for extra transit trucks and cost of depreciation. Many producers maintain one or more Noble-Mobiles in reserve to handle sudden surges of business and to discourage competitors from stepping in.

Pouring site on 16 per cent grade 1.9 miles below Noble-Mobile plant. Arrow points to closest stationary plant 3.4 miles distant. Noble-Mobile was stationed above construction area so all hauls would be downhill. Competitors had to compute costs on slow, ponderous up-hill drags.

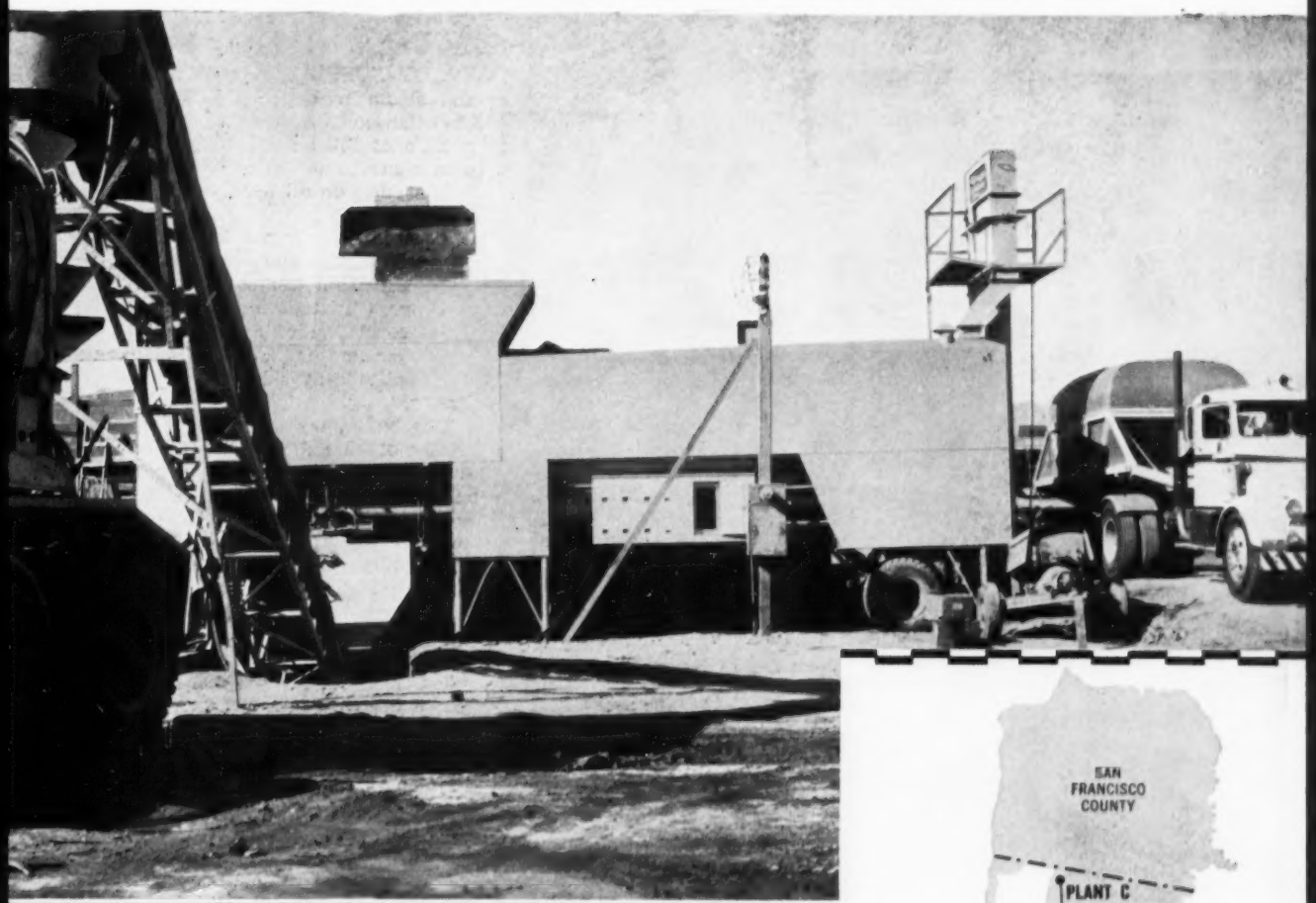
Concrete for 10,000 homes in a 10 year building program! $35,000 Noble-Mobile batching plant, located 2 miles above, supplies concrete for foundations, sidewalks, retaining walls, driveways, patios.

NOBLE-MOBILE *Batchmobile*
Covered by patents pending

WRITE FOR CIRCULAR

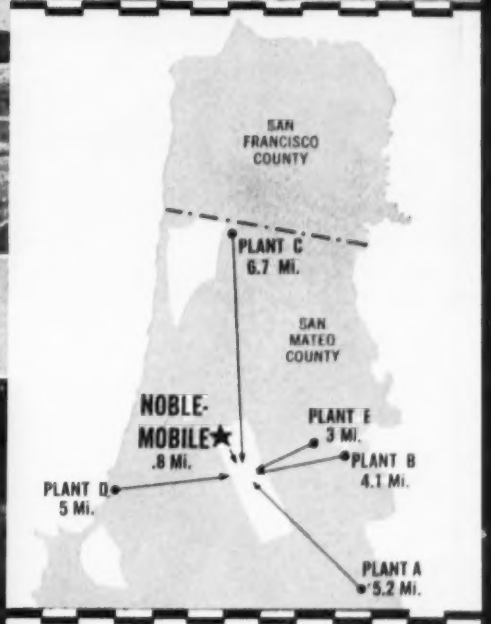
THE NOBLE COMPANY • 1860-7TH ST., OAKLAND 20, CALIF. • TEMPLEBAR 2-5785
Branches: 20950 Center Ridge Road, Cleveland 16, Ohio. EDison 1-3426
518 First Ave. North, Seattle, Wash. MUtual 4878
218 Richmond St., El Segundo (Los Angeles), Calif. EAstgate 2-4518
International Sales Agent: Frazar International Corp., San Francisco

NOBLE-MOBILE got concrete at 6% profit against bids



Supplies up to 400 yards per day to transit trucks. Bulk cement storage with truck hopper unloading screw and elevator. Weighs aggregates and cement separately and simultaneously. Automatic or semi-automatic control. Set up in 1 day. No field wiring, concrete foundations or crane time required on base plant.

Fed by scooploader from aggregate and sand piles. Cost to haul aggregates, sand and cement from producing site to Noble-Mobile no more than to haul to general area where competitors' stationary plants are located. Plant may also be fed by conveyor or crane.



Map of construction areas south of San Francisco showing Noble-Mobile site and competitors' stationary plants — A, B, C, D, E. Note the .8 mile haul from the Noble-Mobile compared with the up to 6.7 mile hauls from the others. "Economics of job-site batching are so sound no outside stationary plant can compete," reports Bob Soldini, Cupertino Concrete Company.

DISTRIBUTORS: BIRMINGHAM, ALA., Equipment Service Co. • PHOENIX, ARIZ., Superior Equipment Co. • VANCOUVER, B. C., Westcoast Equipment Co., Ltd. • DENVER, COLO., Western Machinery Co. • BALTIMORE, MD., General Supply & Equipment Co., Inc. • CEDAR RAPIDS, IOWA, James W. Bell Co. • INDIANAPOLIS, IND., Manwaring Machinery Co. • DETROIT, MICH., R. G. Moeller Co. • ST. PAUL, MINN., Borchert-Ingersoll, Inc. • CLEVELAND, OHIO, Wepco Equipment Co. • LOS ANGELES, CALIF., Smith-Booth-Usher Co. • PORTLAND, ORE., Clyde Equipment Co. • PHILADELPHIA, PA., Furnival Machinery Co. • PITTSBURGH, PA., Equipment & Supplies, Inc. • AMARILLO, TEXAS, Plains Machinery Co. • DALLAS, TEXAS, North Texas Equipment and Supply Co. • HOUSTON, TEXAS, Boehck Engineering Co. • EL PASO, TEXAS, Border Machinery Co. • WACO, TEXAS, Richards Equipment Co. • SAN ANTONIO, TEXAS, Contractors Machinery Co. • SALT LAKE CITY, UTAH, Arnold Machinery Co. • SEATTLE, WASH., Star Machinery Co. • SPOKANE, WASH., Intermountain Equipment Co. • CASPER, WYOMING, Studer Tractor & Equipment Co. • MONTREAL, QUE., Laurentide Equipment Co., Ltd. • WINNIPEG, MAN., Huggard Equipment Co., Ltd. • BOSTON, MASS., Hedge & Mattheis Co. • LOUISVILLE, KY., Emmett C. Watson Co. • NASHVILLE, TENN., Peterson Machinery Co.

Concreting Goes on All Winter

STEAM rises from bucketful of heated concrete dumped in near-freezing weather. A thermometer is placed in the concrete after dumping to make sure temperature is 70 deg.

READY SUPPLIES of hot water and steam make it possible for Christiansen Brothers Construction Co. of Salt Lake City, Utah, to pour concrete at a constant 70 deg temperature on all but the coldest winter days.

To assure steady, ample supplies for cold weather work on a building at Brigham Young University in Provo, Christansen put together a rig consisting of a Cyclotherm steam generator and a boiler, mounted side-by-side on a semi-trailer.

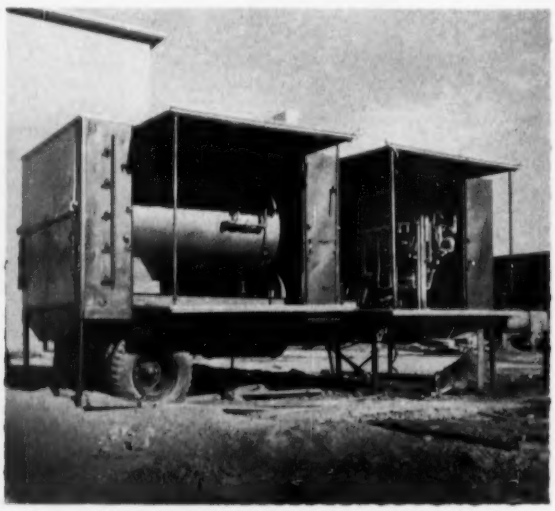
The boiler, with a recovery capacity of 25 gal per min at 180 deg, furnished water for the concrete mix and for melting ice and snow off reinforcing steel and forms immediately before the pour. Slabs on the job required from 180 to 200 yd of concrete per day.

The generator pumped steam into perforated pipes buried in the aggregate piles. At night the piles were covered with tarps to contain the heat. When the frame of the building was erected, the generator supplied steam to unit heaters inside the building.

With this set-up, Christiansen was forced to close down concreting operations only seven days during the winter, and this only on outside work during the coldest days.

Christiansen's $2 million contract was for construction of the Family Living Center Building.

HOT WATER from boiler melts ice and snow off reinforcing steel and forms just before the first bucket of concrete is poured.



BOILER and portable steam generator, mounted side-by-side on a semi-trailer at the site, draw fuel from an underground oil tank.

no
contractor
can
afford
to be
without
self-
propelled
air compressors

No contractor can afford to be without Schramm *Pneumatractors*

ELIMINATE A TRUCK . . . The operator simply climbs into the seat and drives a complete 125 cfm compressed air plant from job to job. Pneumatractors go where ordinary towed portables can't.

SAVE TIME . . . No delays, no crews tied up; Pneumatractors go where needed—start work at once.

PROVIDE EXTRA AIR . . . Pneumatractors can tow any standard portable compressor to the job and provide an extra 125 cfm of air.

MULTIPURPOSE . . . Pneumatractors are versatile machines for many jobs . . . shoveling, loading, trenching, digging, grading, backfilling, hoisting, hauling, sweeping, pumping and many others.

INITIAL COST IS LESS . . . Pneumatractors cost no more than ordinary towed portables . . . you save the cost of a tractor and other special purpose machines.

OPERATING COST IS LESS . . . Pneumatractors are easily serviced by any gasoline engine service man . . . no special training needed. Piston design uses less fuel than other types of compressors.

SAVE MANPOWER . . . One man operates a Pneumatractor . . . no manhandling required—they are safer.

COST SAVINGS BEGIN WHEN YOU DRIVE A PNEUMATRACTOR TO THE JOB

A Pneumatractor is both a 125 cfm air compressor *and* a wheel tractor—converting instantly from one to the other, right from the instrument panel.

Schramm Standard and Heavy Pneumatractors are simply designed and ruggedly built; they are equal to the toughest demands of heavy construction and maintenance work.

Standard Pneumatractor

SPECIFICATIONS (less accessory equipment):	
Actual Air Delivery	125 cfm @ 100 psi
Bore and Stroke—Engine (3 Cylinder)	4½" x 4¾"
Compressor (3 Cylinder)	4½" x 4¾"
4 Forward Speeds, 1 Reverse Speed	
Horsepower	41 hp
DIMENSIONS (without attachments):	
Overall Length	116"
Overall Width (depending on wheel set-up)	59" to 93"
Overall Height	63"
Weight	3650 lbs.
Dual Wheels and Sand Tires Available	

Accessories Available:

Pneumajack and Pneumafeed (wagon drills), winch, snow plow, rotary sweeper, post hole digger, mower, operator's cab and towing bar.

Heavy Pneumatractor

SPECIFICATIONS (less accessory equipment):	
Actual Air Delivery	125 cfm @ 100 psi
Bore and Stroke—Engine (3 Cylinder)	4½" x 4¾"
Compressor (3 Cylinder)	4½" x 4¾"
5 Forward Speeds, 1 Reverse Speed	
Horsepower	41 hp
DIMENSIONS (without attachments):	
Overall Length	117"
Overall Width (depending on wheel set-up)	57⅞" to 89⅞"
Overall Height	61¾"
Weight	6080 lbs.
Dual Wheels and Sand Tires Available	

Accessories Available:

Pneumajack and Pneumafeed (wagon drills), winch, snow plow, rotary sweeper, angledozer blade, platform scaffold, earth auger, post hole digger, mower, front end loader, backhoe, shovel, towing bar, hydraulic boom and operator's cab.

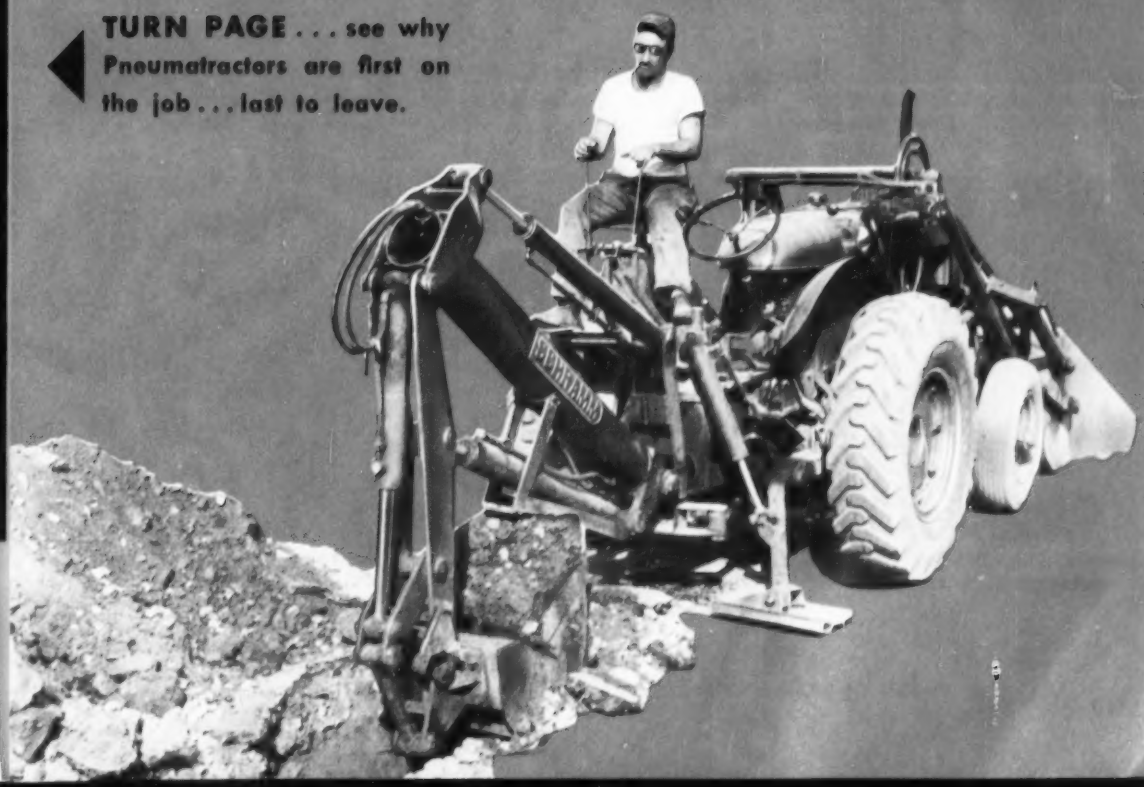
Standard Pneumatractor

. . . an air compressor with *tractor features.*

Heavy Pneumatractor

. . . a heavy loader and backhoe with a wide choice of versatile attachments . . . with the added convenience of air.

TURN PAGE . . . see why Pneumatractors are first on the job . . . last to leave.



CAN YOU AFFORD TO BE W

OPERATING AIR TOOLS—125 cfm instantly available for every compressed air need

POWER SHOVELING—Cylinder and dipper construction provides fast, powerful digging

LOADING — Full cubic yard buck handles heaped loads up to 4000

ROCK DRILLING—Self-propelled wagon drill—drills at any angle

HOISTING—Lifts, hoists, holds, carries, places

STAKE DRIVING—Fastest way to driv stakes and posts

BACKFILLING—7' straight or angling blade controlled by operator

TAMPING — Operates 3-gang tamper or four single tampers

MUDJACKING — Drills holes in pave ment for raising or undersealing

900 NORTH GARFIELD AVENUE Schr

WITHOUT THIS VERSATILITY?

yard bucket
p to 4000 lb.

BREAKING OUT CONCRETE—Moves along as work progresses

TRENCHING—Bucket widths up to 36" —digs to 9'6"

GRADING — Tilting angle blade for gutter and shoulder grading

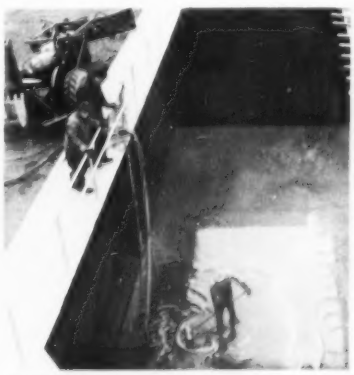
way to drive

UNLOADING—High lift clears 9'6" side of dump truck; hydraulic dumping

TOWING—Pulls auxiliary equipment or extra air compressor

SWEEPING—7' Palmyra or steel brushes for heavy or light sweeping

les in pave-
dersealing



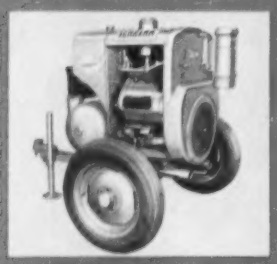
PUMPING WATER—Pumps water, sludge or raw sewage up to 400 gpm

PLOWING SNOW — 7' blade clears 6' path easily through wet or dry snow

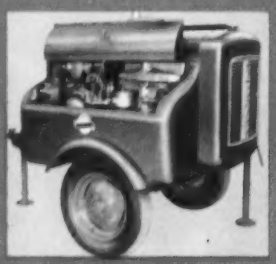
LIFTING — Universal movement of backhoe lifts, carries and places

Schramm, Inc. WEST CHESTER, PENNSYLVANIA

SCHRAMM—FOR ALL YOUR COMPRESSED AIR NEEDS



20 and 35 Pneumapower



75 and 125 Pneumapower

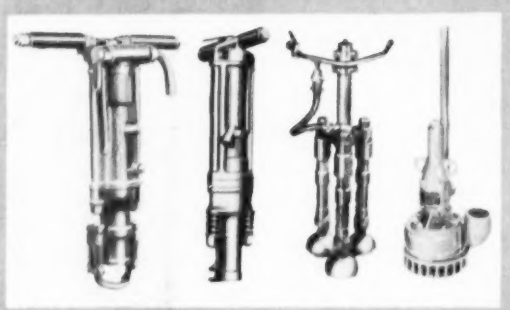
PNEUMAPOWER AIR COMPRESSORS—have engine and compressor in one unit; smallest, lightest, most compact air compressors.

125, 210 and 315 Unistage

600 Unistage

UNISTAGE AIR COMPRESSORS—gasoline or diesel engine driven compressors with clutch; mounted in a frame as a rigid unit. Similarity of design and construction between engine and compressor means balanced construction, easier servicing, fewer replacement parts to stock.

DRILLING EQUIPMENT—the Schramm Rotadrill for light or heavy drilling, either mounted on truck or Heavy Pneumatractor, drives to the drilling site; quick, easy set-up—fast clean drilling.



TOOLS—rock drill, paving breaker, spade, single and 3-gang tampers, sump pump; complete line offers superior construction, design and performance.

SEE FOR YOURSELF HOW YOU CAN SAVE WITH *Pneumatractors*

Contact your Schramm office for the name of your nearest dealer (located in all principal cities).

SCHRAMM BRANCH OFFICES

BOSTON
22 Newton St., Brighton, Mass.
STadium 2-1866

CHICAGO
5550 W. North Avenue
Chicago 59, Ill.
TUxedo 9-4412

DENVER
3983 West 84th Avenue
Shaw Heights, Westminster, Colo.
HArrison 9-2191

FORT WORTH
4304 Lisbon St., Fort Worth, Texas
PErshing 7-9757

HARRISBURG
24 Taylor Blvd., Harrisburg, Pa.
CEdar 3-1564

HOUSTON
9714 Tappenbek Dr.
Houston 24, Texas
HOmestead 5-3062

KANSAS CITY
7602 East 108th Terrace
Hickman Hills, Missouri
SOuth 1-8355

KNOXVILLE
525 Arrowhead Trail
(P. O. Box 664) Knoxville, Tenn.
Knoxville 8-1881

LOS ANGELES
846 E. 6th St., Los Angeles 21, Calif.
TUcker 2431

MIAMI
61 N. W. 79th St., Miami 38, Fla.
PLaza 8-5029

MINNEAPOLIS
P. O. Box 268, Hopkins, Minnesota
WEst 8-5284

NEW YORK
90 West St., New York 6, N. Y.
COrtlandt 7-0640

PHILADELPHIA
1412 Belfield Ave., Phila. 40, Pa.
GLadstone 5-7500

PITTSBURGH
Dickey Road, R. D. #2 Box 34
Gibsonia, Pennsylvania
HIlltop 3-2550

PORTLAND
6915 S. W. 68th Ave., Portland, Ore.
CHerry 4-8463

ROCHESTER
39 Castle Road, Rochester 23, N. Y.
HIllside 0743-J

SAN FRANCISCO
1315 Howard St., San Francisco, Cal.
UNderhill 3-6655

TULSA
218 South 74th E. Ave., Tulsa, Okla.
TEmple 5-1759

WASHINGTON
1254 23rd Street N. W.
Washington 7, D. C.
FEderal 3-7280

WICHITA
2255 S. Delrose, Wichita, Kansas
MUrray 3-7914

FORM NEV-57

PRINTED IN U. S. A.

Schramm, Inc. 900 NORTH GARFIELD AVENUE, WEST CHESTER, PENNSYLVANIA

Allis-Chalmers low-cost Model D

BIG in power, strength, versatility

The Model D grader has the power to tackle hundreds of grading jobs profitably. With either 50-hp gasoline or 50-hp diesel engine, it offers plenty of torque and lugging ability.

Big-grader design means long life for the Model D, too. Strong, single-member tubular main frame . . . husky drawbar and one-piece circle . . . ROLL-AWAY moldboard . . . ground-gripping tandem drive . . . they're all plus performance advantages.

Job-multiplying attachments make a big difference in extending the Model D's versatility . . . include a midship-mounted hydraulic scarifier and rear-mounted ⅝-yd loader. Other optional equipment includes power circle turn, shiftable moldboard, leaning front wheels and an all-weather cab.

To keep the profitability in your grading operations, see the Model D now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ROLL-AWAY is an Allis-Chalmers trademark.

ALLIS-CHALMERS *Engineering in Action*

The Engineer's Field Report

CASE HISTORY

LUBRICANT RPM Delo Oils

FIRM Murphy Brothers Inc., Contractors Spokane, Washington

Contractor averages 6,000 hrs. between overhauls on 58 heavy-duty engines using RPM DELO Oil

"WE STRETCH THE TIME between engine overhauls with RPM DELO Oils," says Carrol Peck, Maintenance Supt. for Murphy Bros., Inc., road construction and grading contractors. "We never pull an engine down until it goes at least 5,000 hours. One D-7 went 8,000 hours and a 9-year-old UD-14, overhauled at 13,000 hours, was spotless—no sludge, no carbon build-up, all rings free. We've used RPM DELO Oils for more than 7 years and never lost a bearing due to lubrication."

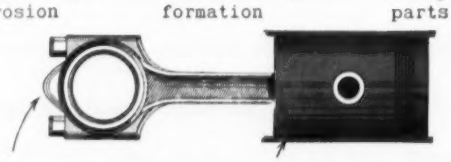
DW-21 scraper (above) has worked 16 months without an overhaul, in temperatures varying from 10° below zero to 100° above. Murphy Bros. entire fleet of 23 tractors and scrapers, 4 HD-20's, 9 shovels and 23 trucks use RPM DELO Lubricating Oils.

Why RPM DELO Oils prolong engine life

Special compounds stop corrosion

Anti-oxidant resists lacquer formation

Detergent keeps all parts clean



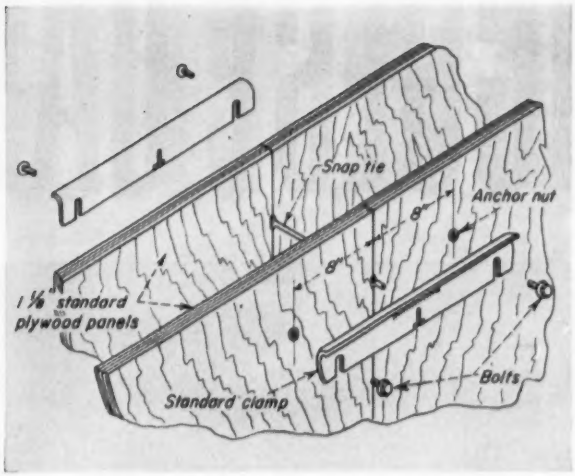
Metal-adhesion qualities keep oil on parts in running or idle engine—inhibitor resists foaming

RPM DELO LUBRICATING OILS

For More Information about this or other petroleum products of any kind, or the name of your nearest distributor, write or call any of the companies below.

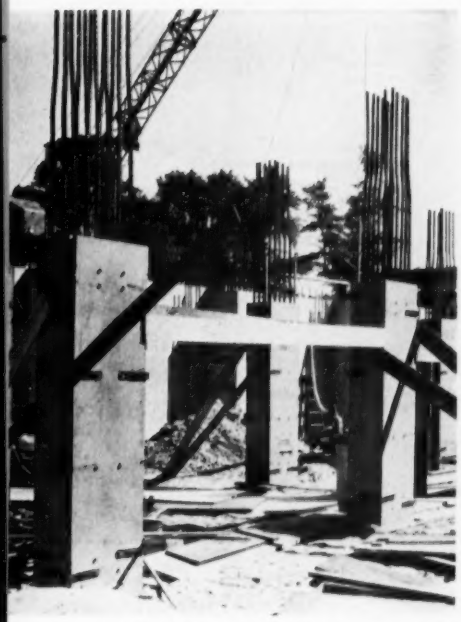
TRADEMARKS "RPM DELO" AND DESIGN REG. U. S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

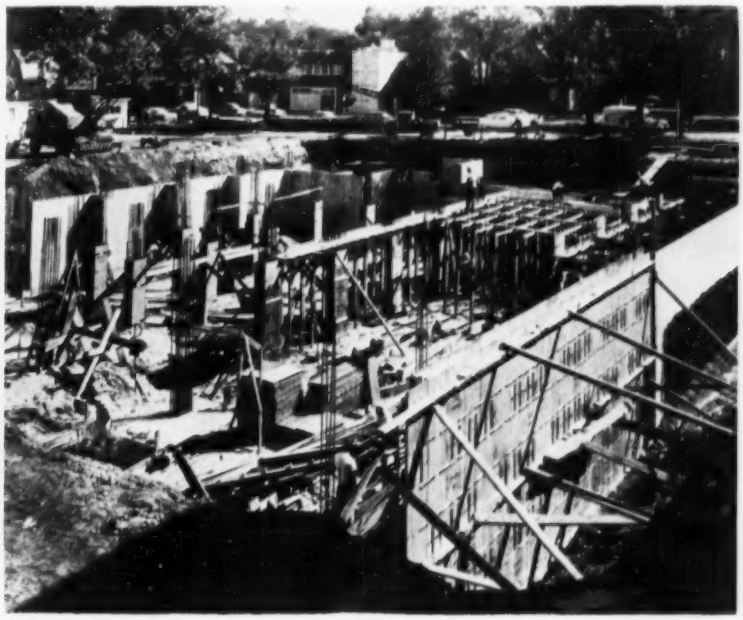


THIS IS ALL that goes into erection of waler-less form: (1) Plywood panels; (2) Clamp and anchor bolts; (3) Snap-ties.

A TURN OF THE BOLT locks clamp in place, simultaneously bracing panels. Ratchet wrench is the only erection tool needed.



SPECIAL CLAMPS come for columns and pilasters, too, making even these chores easy.



FOUNDATION WORK races ahead at twice normal speed. Verkler Construction Corp. credits speed to new forming system. Job is the $2 million South Bend Memorial Hospital.

New Form Eliminates Wales

A UNIQUE foundation form that eliminates the use of wales and can be erected and stripped at a cost of less than 20¢ per contact sq ft is at work in South Bend, Ind.

Verkler Construction Co. of South Bend is using 20,000 sq ft of these new forms to build foundation walls for the $2 million South Bend Memorial Hospital.

The hospital is an eight-story, reinforced concrete structure with a foundation that measures approximately 97x160 ft. Foundation walls are reinforced concrete averaging 1 ft thick and 12 ft high.

Normal labor forming costs for a job of this type might range from 40 to 50¢ psf. But Verkler, using the new forms, cuts this cost by better than half. He uses a labor force for forming of 12 carpenters and eight laborers. Carpenter rates in the area are $2.00 per hr; labor rates, $2.20 per hr.

The forms themselves are 2x4 2x8, 4x4, and 4x8-ft panels of solid 1⅛-in. plywood pre-drilled and pre-fitted with special rust-resistant hardware.

Secret of the waler-less form-

continued on page 190

WORLD'S BIGGEST "CAT"

Scaling 117,000 GCW*, Reo A-733 Carries Giant Caterpillar 270 Miles to Northern Quarry Site

Rolling big loads like this is routine work for Reo's rugged "Big V's" in the construction field. That's because Reo Tandems are 100% truck built and powered to bear up under punishing performance on or off the highway

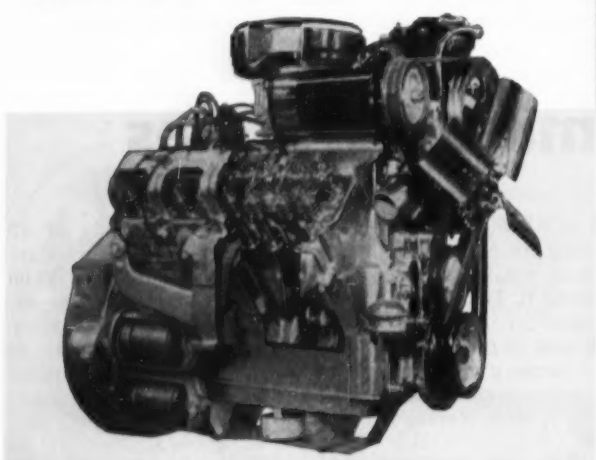
Reo's giant 235 h.p. Gold Comet V-8 engines—with their advanced type short-stroke, wet-sleeve construction—deliver more pulling power to the wheels where power really counts . . . *in getting big loads quickly underway . . . and keeping them rolling smoothly on schedules that pay off in more trips per day.*

When you buy Reo trucks you don't gamble on engine performance . . . you buy proved performance—*backed by Reo's own 100,000 mile or 1 year warranty.* No other truck manufacturer offers you such positive assurance of quality and long life.

Reos range from 16,000 GVW to 78,000 GCW. Custom engineered to the job. For the Reo "Big V" that's best for your job, see your Reo Factory Branch or Distributor today.

**Special Permit*

This 220 h.p. V-8, Reo A-733 tandem is owned and operated by Michigan Tractor and Machinery Company of Detroit and Grand Rapids. As lower Michigan's exclusive Caterpillar distributor, they rely on Reo power to move heavy construction equipment like the new 35 ton D-9 tractor all over the state.



Reo short-stroke, wet-sleeve Gold Comet engines range from 100 to 235 h.p., Gas or LP-Gas, Sixes or V-8s. Up to 35% more efficient than the industry average. Models also available with 175 h.p. Cummins Turbodiesels.

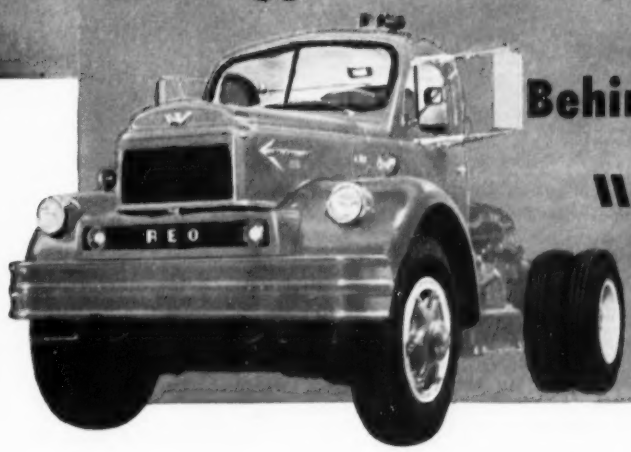
REO MOTORS, INC.

LANSING 20, MICHIGAN • TORONTO, ONTARIO

SUBSIDIARY OF **BOHN** ALUMINUM AND BRASS CORPORATION

ROLLS ON A REO "BIG V"

The Bigger Your Load, the Bigger Your Pay



Behind a REO "BIG V"

"Payload-Engineered" Trucks and Tractors

WALER-LESS FORMS

continued from page 187

ing method, however, lies in the steel clamps designed to hold the forms together. The clamp is a length of steel slotted at each end and in the center to fit over anchor ties. Clamps and ties are located so that the fluid pressure of the poured concrete makes the forms self-aligning and rigid without use of walers or studs.

Clamps are attached to the plywood at the job site by cap bolts that screw into anchor nuts counterbored into the plywood. Panels also are edge-routed for form-tie inserts.

"The forms really are an advantage over conventional foundation forms," says Robert Koopman, job superintendent. "Not only are they easier to stack and move about, but handling them is no effort at all. Weights range from 25 to 100 lbs."

This is how the forms are erected. After footings have been poured, an outside wall line is drawn on the footing surface. Panels for the outside wall then are set along the line and braced temporarily by lengths of 2x4's against the ground. Clamps are slipped over the anchor nuts and bolted secure with a simple ratchet wrench.

Reinforcing steel next is placed, then forms for the inside wall. Finally tie-rods are slipped through the edge routing.

Special panels complete with odd-shaped clamps are made for forming of columns, pilasters, and odd walls. For places where form cutting normally would be required, the contractor buys pieces of 1⅛-in. plywood for use with hardware supplied by the manufacturer.

About the only drawback Verkler has found in using the forms is that it is risky to pour walls to a height of more than about 4 ft an hr because unequal pressure might buckle the forms.

"This hurts on small pours," said Koopman. "But it doesn't cause too much delay in a pour that might run for several hours."

Koopman pours by crane-handled bucket and chutes. To strip forms after concrete has cured, workmen have only to release tie bolts, remove the clamps, and pull the forms free.

"There's very little prying of panels," Koopman said. "The forms fall free almost without effort when you release hardware."

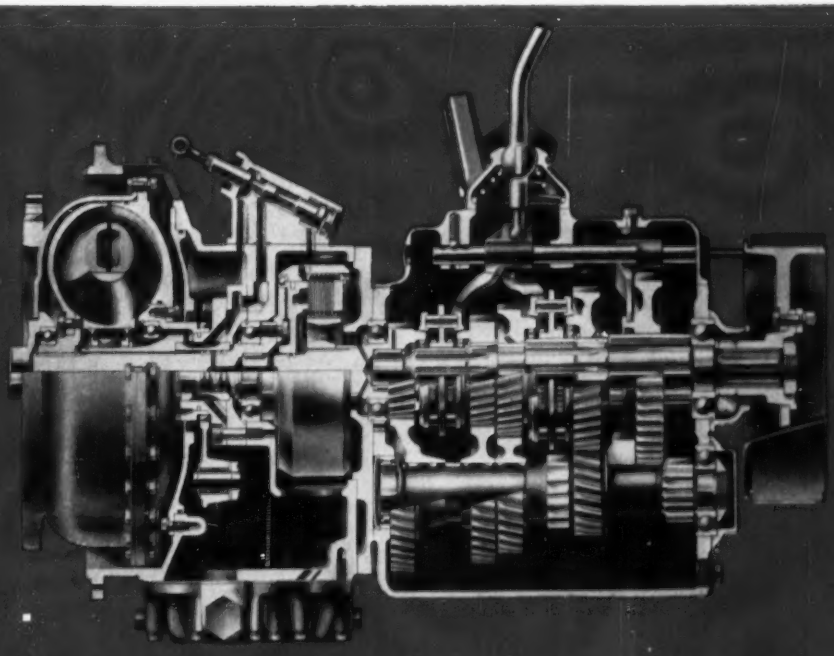
POUR BY BUCKET or chute—fluid pressure of concrete aligns forms and makes them rigid without the use of wales or studs. Rate of pour is about 4 ft per hr.

STRIPPING requires only releasing clamps and pulling panels free. Forms weigh between 25 and 100 lbs insuring easy handling. Flush design permits easy stacking.

The forming technique and the forms are the results of three years of tests conducted by their originator, Form Co, Inc, of Rockford, Ill. The method now is patented. The maker claims the forms are applicable to all types of industrial, commercial, and residential forming as well as bridges, reservoirs, culverts, and other structures.

Forms are rated for approximately 30 uses but have been used successfully up to 40 times. Wall surfaces require little or no rubbing.

No more "tired left foot" and down come costs . . .



with a CLARK *TRANSVERTER*

Trucks Operating on delivery schedules

Coaches making frequent stops

Refuse collection

Concrete mixers and similar industrial applications

Materials handling machinery

Many stationary power plants and oil field applications

. . . New, revolutionary power-train torque converter, hydraulic disconnect clutch, transmission—in a compact, rugged package. Ideal for vehicles in "frequent start" service

No heavy clutching—
Hydraulic clutch of on-off type. Effortless control by push-button or light-pressure pedal

Gear shifting greatly reduced—
Closely spaced ratios—gear changes are fast and smooth

Fine inching control—
Torque converter provides smooth power flow, controlled by accelerator

Smooth starts, swift pick-up—
No engine stall, no lugging, no wheel-slipping—less tire wear

Longer life for drive-train—
No shock-loading. No friction clutch to require adjustment. Far less down-time

Ideal accessibility—
Easiest possible service with no need for special tools

Available for OEM or field conversion—
These exceptional superiorities add up to this certain result: FASTER, EASIER, MORE ECONOMICAL OPERATION.

For the whole interesting story, send for the TransVerter Bulletin.

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY, Transmission Division, Falahee Road, Jackson 6, Michigan
Please send the TransVerter Bulletin
NAME_____
COMPANY_____ POSITION_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

(Advertisement)

4-wheel drive traction. The rugged Universal 'Jeep'*, with the extra traction of its 4-wheel drive, is an all-purpose workhorse, whether providing transportation for initial surveys, taking men and tools to their assignments, or carrying supervisory personnel for inspection work. It carries 7 workers or up to half a ton of equipment and supplies, tows heavily loaded trailers on the road or off.

Why 'Jeep' versatility and all-wheel traction save time and manpower for contractors!

The completely new Forward Control 'Jeep' FC-150 Truck. It's the first time a 4-wheel drive truck has so effectively combined so much cargo capacity (74-inch pickup box), with such exceptional "go-anywhere" maneuverability (81-inch wheelbase).

Mobile power. The 'Jeep' Truck, with hydraulically-operated back hoe, digs foundations, laterals or drainage ditches and does other time and money-saving jobs. It fills the gap between hand digging and heavy-duty earthmoving equipment.

In their weight class, 'Jeep' vehicles are the *only* vehicles originally designed and engineered completely for 4-wheel drive, off-the-road use. That's why they're matchless for year 'round construction operations, in good weather or bad.

These versatile vehicles have proved their all-around mobility and wide range of performance on countless construction projects! Their rugged functional design stands up to the toughest use—and the extra traction of their time-tested and performance-proved 4-wheel drive takes them up steep grades—through mud, sand and soft earth—anywhere they have to go in or around the construction site. For highway travel they shift easily into conventional 2-wheel drive. And with power take-off they operate many types of equipment from winches to back hoes.

Multi-purpose 'Jeep' vehicles supplement heavy-duty equipment, spread their costs over a wide variety of jobs, give you additional savings through long life and low maintenance costs. Ask your Willys dealer for a practical, on-the-job demonstration.

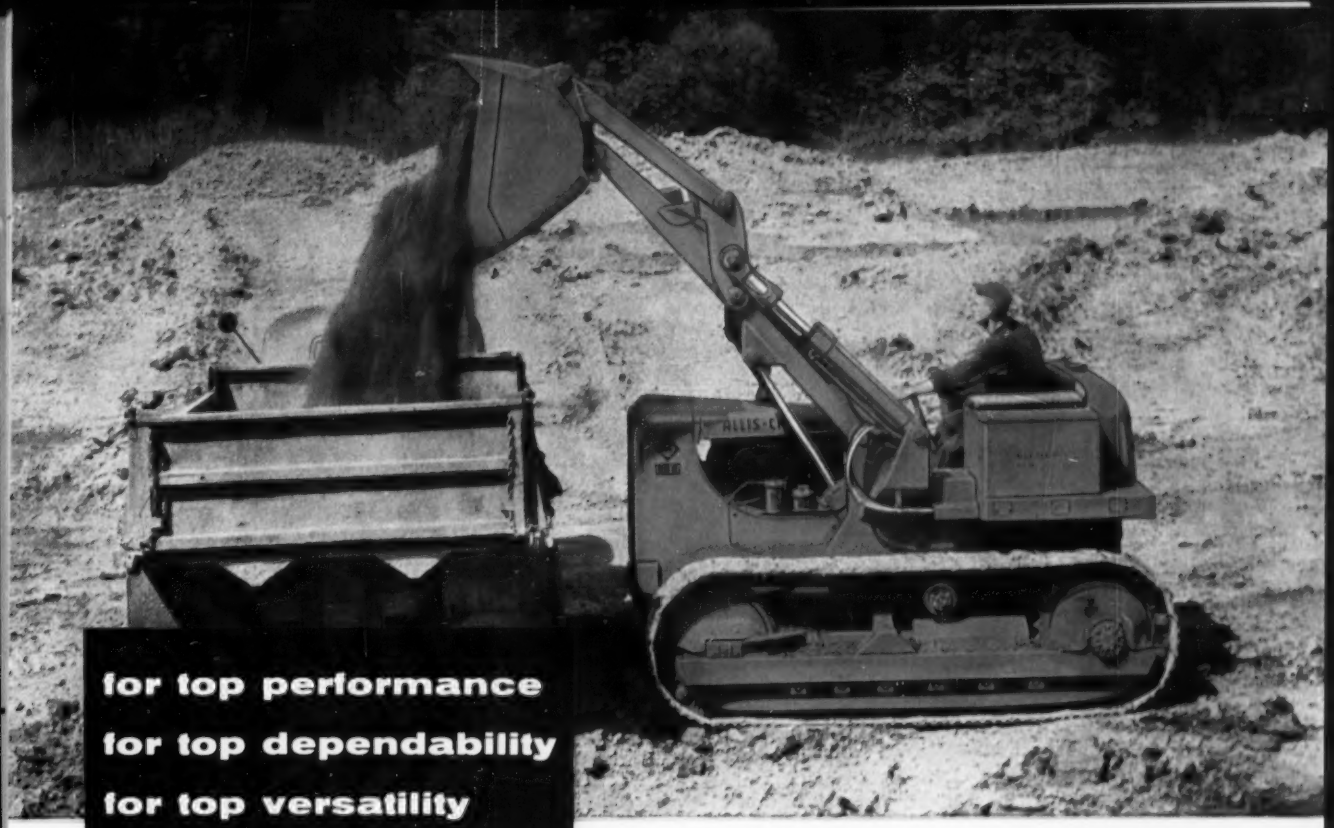
The 'Jeep'®

family of 4-Wheel-Drive vehicles

WILLYS... makers of time-tested utility vehicles

*Model CJ-5 shown

WILLYS MOTORS, INC., TOLEDO 1, OHIO



you can't beat an HD-6G

1½ yd bucket
72 net engine hp
19,600 lb

Look at the exclusive on-the-job advantages the Allis-Chalmers HD-6G gives you:

SIX-TRUCK-WHEEL STABILITY—almost 7 ft of track on the ground!

TWO-POSITION BUCKET—for big loads in loose or hard-packed material.

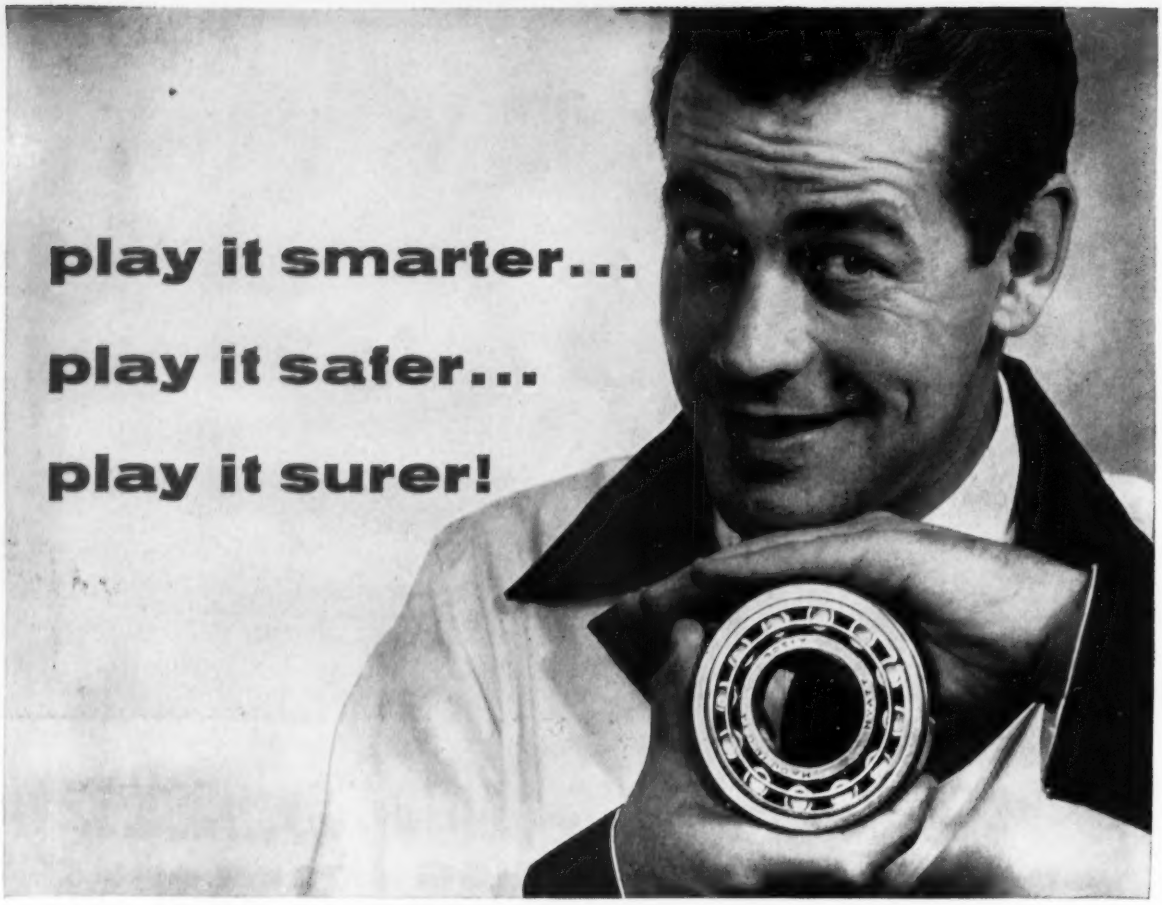
HEAVY WELDED-STEEL SHOVEL SIDE FRAMES and low stabilizer—for greater strength, low center of gravity, outstanding visibility.

ONE-PIECE STEERING CLUTCH AND FINAL DRIVE HOUSING—line-bored for true alignment of shafts and gears.

SIMPLIFIED LUBRICATION—including 1,000-hour lube intervals for truck wheels, idlers and support rollers.

Check these and dozens of other big HD-6G features now at your nearby Allis-Chalmers dealer . . . then see the HD-6G at work! Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*



Always replace a HYATT with a HYATT!

You're *both* smarter and safer when you replace with exactly the same bearing the manufacturer specified for the application.

YOU'RE SMARTER because it means savings in time and trouble. Hyatt Hy-Rolls are precision-built and require no fitting adjustments—they're *completely interchangeable!*

YOU'RE SAFER because you're sure of a dependable job—the same trouble-free performance originally built into the equipment!

Insist on HYATT Hy-Rolls—you're insisting on the lowest bearing cost per hour of service! Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

AVAILABLE THROUGH UNITED MOTOR SERVICE DISTRIBUTORS EVERYWHERE

GM PARTS SALES

Always look for the familiar blue and yellow box —when it comes to quality, there's no substitute for

HYATT HY-ROLL BEARINGS FOR REPLACEMENT

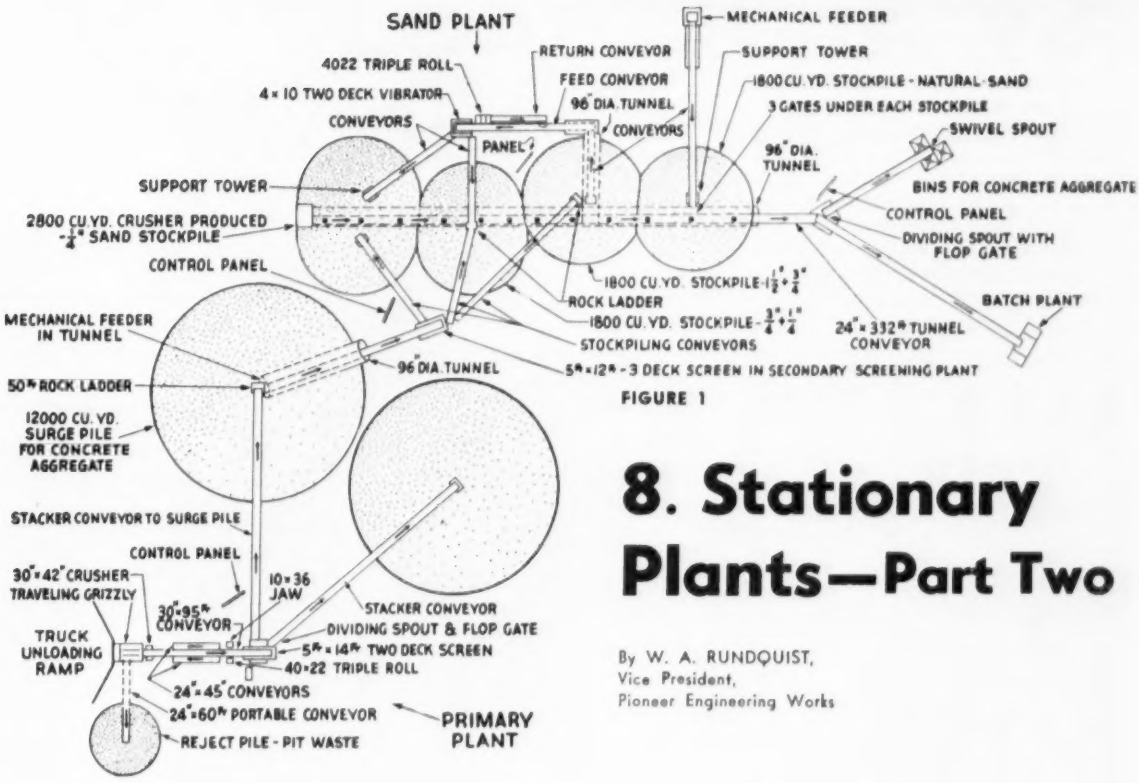


FIGURE 1

8. Stationary Plants—Part Two

By W. A. RUNDQUIST,
Vice President,
Pioneer Engineering Works

LAST MONTH we gave some of the elements of rather simple plants with sample calculations showing how to arrive at basic data for design. Now we expand the simple plant into the more complex installation and show how these are developed.

The commercial, or stationary, plant normally serves some circumscribed trade area. Within that area there may be many markets for the material. Thus it may be necessary that the plant be so arranged that it will have the flexibility to provide aggregates in sufficient quantities of various size ranges to meet varied market requirements. For example, a typical plant operating in a limestone quarry might be called upon to produce at the rate of 1,600 tons a day to satisfy a market where 35% of the output goes into the manufacture of portland cement concrete, 35% goes into crushed rock for roads and streets, 15% goes into hot-mix black top, 5% into the making of concrete blocks, and the balance into the construction of driveways. While there may be slack times during the year, stockpiling can be carried on to take care of peak demands.

Following are some plants installed recently to take care of high demands for specific size ranges and blends of aggregates to meet varying applications of usage.

Fig. 1 shows a plant that is virtually four plants in one. In it are a primary crushing plant, a secondary crushing plant, a secondary screening plant and a sand plant. Included also are product stackers and a reclaiming system. Main elements of the primary crushing plant are a grzzly feeder discharging to a large crusher that reduces quarry rock to minus 8 in. The grizzly removes dirt and deleterious material, which a portable conveyor transports to a reject-waste pile.

From the primary crusher, minus 8-in. rock is conveyed to a 5 x 14-ft two-deck screen that scalps off plus 6-in. rock (over the top deck) to a secondary jaw crusher. Material off the second deck (6 in. down to specification size) goes to a secondary triple-roll crusher. Products from both crushers return in closed circuit to the two-deck screen. A stacker conveyor carries the specification product to a surge pile. Large rock for such things as ballast, produced by removing the scalping screen's bottom deck and changing the top deck openings to provide the size rock desired, is stockpiled near the surge pile.

Specification size material in the surge pile produced by the three crushers in the primary and secondary plants consists of minus 1½-in. material. This is reclaimed by a tunnel conveyor under the pile and fed over a secondary sizing screen from which three lesser stock piles are built. Rock ladders support the conveyors in the piles. The secondary screen is equipped with three decks to produce minus ¼-in. (or sand), ¾- to ¼-in. stone, and 1½- to ¾-in. stone. These products can be drawn from the stockpiles in the proper ratios to provide the aggregates specified for the concrete batch plant, or they can be conveyed to the three bins for hauling to other operations.

Included in the sand plant is a fourth crusher that can manufacture additional sand as required by drawing off from the surplus 1½-

to ¾-in. stock pile. This crusher operates in closed circuit with a two-deck screen, so additional ¾- to ¼-in. material can be produced and added to this stockpile also.

In addition, natural sand satisfactory for some of the work is piled so that all the finished material is available for reclaiming by a single tunnel conveyor.

Under each stockpile are three electrically controlled, air-actuated gates that enable the operator to withdraw the material as required.

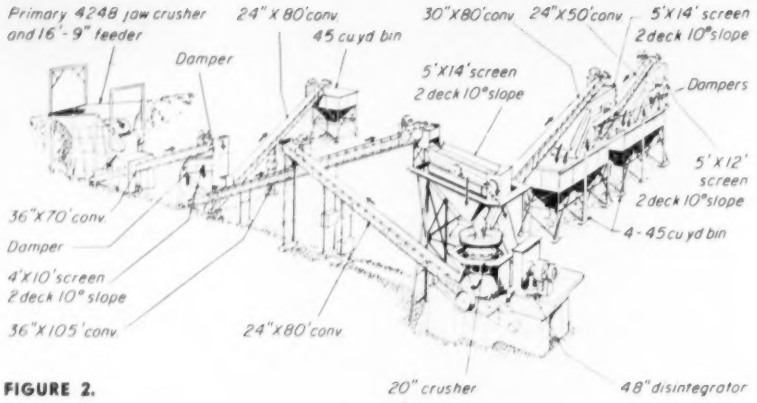


FIGURE 2.

Fig. 2 shows another kind of high-capacity installation without surge piles, but with a considerable amount of built-in flexibility to meet multiple requirements.

The primary jaw crusher is designed to take huge chunks of quarry rock and break them down to a size that can be fed to a 20-in. gyratory. It is itself fed by dump trucks emptying on to a heavy-duty feeder ahead of it.

There are four heavy-duty screens in this plant, all two-deck. The first screen has 2½-in. openings on the top deck and 1-in. openings on the second. When desired, crusher-run stone can be delivered from this screen to a side-delivery conveyor for transport to a large bin. The first screen can be shunted out of the circuit completely so that all material from the primary crusher is carried to the second screen. This is accomplished by a damper in the feed box to the first screen.

When the first screen is in use, oversize from it goes to the second screen, which is equipped with 5-in. openings on the top deck and 3¾-in. openings on the second. The 3¾-in. minus product is routed over a pair of sizing screens, while the plus 5-in. and 5- to 3¾-in. materials are sent to a gyratory crusher and a cagemill disintegrator respectively. Both products from these crushers are returned to the second screen.

The first finish screen yields three stone sizes: 3¾- to 2½-in., 2½- to 1¼-in., and minus 1¼-in. This last size is transferred to the second sizing screen, which produces 1½- to ½-in., ½-in. to No. 4½ mesh, and No. 4½ minus.

Products from the two top decks of each sizing screen can be combined by a damper arrangement on each screen.

In some areas where the stone

A. S. T. M. A 325-55T
WHEN YOU NEED THEM!

Michigan's New Mackinac Bridge—Detroit Times Photo

For fast reaction to your order, buy high strength construction washers direct from the manufacturer. You save time and money.

Hard, flat and concentric, these washers are a Whitehead specialty. They are made from prime steel to exact A.S.T.M. specification A-325.*

Standard sizes stocked for immediate heat treat are: ½", ⅝", ¾", ⅞", 1", 1⅛" and 1¼". Other sizes available on request.

Delivery is fast and dependable. Try it and see.

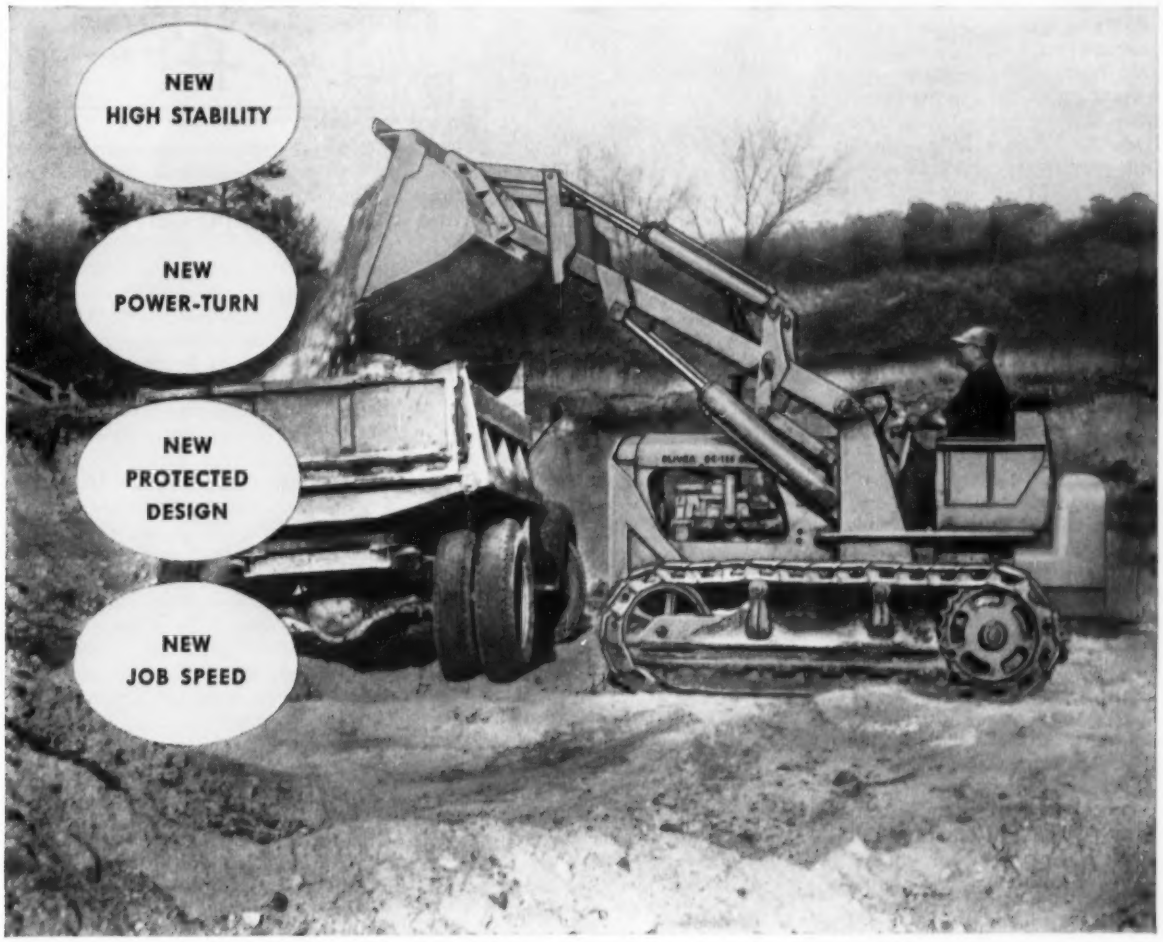
WHITE HEAD EST 1903

* Hardness of 68 to 75 Rockwell A, and carburized to a minimum depth of 0.015 inch. Quenched and tempered (non-carburized) washers have a hardness of 35 to 45 Rockwell C.

WHITEHEAD STAMPING CO.
1665 W. Lafayette • Detroit 16, Michigan
Phone WOodward 2-1055

NEW OLIVER OC-126 LOADER–1½ Yd.

Loaded with work advantages!



At last! Loader design comes *down to earth*—with the low silhouette mounting of this new Oliver OC-126. No more vision-blocking, high side pedestals this way... no more "rocking horse loading" action.

With the fulcrum point down, performance steps way up. Clean, clear-view design permits operator to work faster and safer. Low center of gravity means quicker and fuller loading... higher lifts and non-spill dumping. There's greater bucket roll-back *and* rotation. It all adds up to more yardage on any job... more profits.

The Oliver OC-126 is designed specifically as a complete loader unit. Special, rigidly mounted heavy frame has extra strength factor for loader service.

It's complete with Oliver POWER-TURN—the only crawler-loader with two-track power at *all* times, even on turns. It's sharper turning, more maneuverable.

It's today's most work-protected, most trouble-free loader. Deep, full-length steel guards protect the five lower track wheels, keep out stones, gravel. No exposed PTO or pump guard to get damaged. Works with full line of attachments. 53 d.b.h.p. diesel.

***NEW, JUST PRINTED.** Complete catalog covering all details of this modern loader. Ask your Oliver distributor or write for Bulletin I-1047.*

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment.

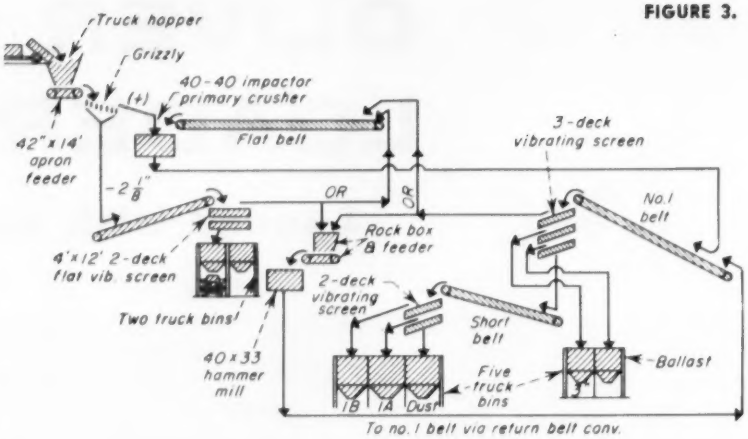
permits, it may be desirable to produce more fine material by impact crushers. Such an installation is shown in the flow diagram, Fig. 3.

Note that an electrically vibrated grizzly feeder is interposed between the primary crusher and the apron feeder under the truck hopper. This grizzly removes minus 2⅛-in. material that is carried to a two-deck screen for sizing and loading to trucks. Oversize goes to a hammermill. When desired, oversize from the primary impact crusher can be sent to the hammermill also. Further, provision is made for by-passing the hammermill completely, with all oversize returning to the impact primary in what might be termed a compound closed circuit.

The advantages of this flexibility in design are obvious. The hammermill can be shut down without shutting down the whole plant. As the impactor and hammermill produce different gradations of fines, there is sufficient latitude in operations to produce a variety of products. The flow of feed to each crusher can be controlled for optimum operation of each. Of course, as pointed out in the earlier chapters on crushing, impact crushers and hammermills should be confined to applications where the rock or stone are not too abrasive, to keep maintenance figures within the realm of profitable production.

Fig. 4 shows a sand and gravel operation for producing many sizes of material to meet heavy construction requirements. Oversize boulders from the glacial deposit are discarded. Because the material contains some dirt, washing and a revolving scrubber screen are involved. (Note: Washing plants will be covered in a later chapter.)

FIGURE 3.



Flow of material and the units involved are readily apparent from study of the diagram. But note the rotary grizzly ahead of the primary crusher. Scalping ahead of the crusher is good practice in any gravel operation. Rotary screens, while capable of accurate sizing and generally less expensive to install than a vibrating screen, are low in capacity for their size. Had conditions of capacity warranted, a vibrating type grizzly or scalping screen could have been installed ahead of the primary crusher instead.

Plant Design Phases

The final design of an aggregates producing plant, for any but the simplest, involves much planning and consideration of a number of alternates. There usually is no one solution to the problem, but there is one that will cost least over-all to install, maintain, and operate. Thus it is well to add all three factors together and weigh them as a group before making a final decision.

It is assumed that the required study and analysis of the pit or quarry have been made, and that a market survey has disclosed the types and quantities of material required.

Next step is to lay out a rough diagram of the flow of material through the proposed plant. After the rough, some refinements can be made to facilitate further study. Such a diagram need be only lines with arrows to indicate flow. Probable units of equipment need merely be noted, as in Fig. 5.

Then make a flow diagram either in plan or elevation. The plan has the advantage of showing how the units might be best arranged for conveying material from one unit to another, whereas the elevation shows more clearly how screening and separating functions can best be arranged. Fig. 6 is an example of a plan type diagram. Examples of the elevation type diagram are shown in Fig. 3 and 4.

After the flow diagram has been fairly well established, it is possible to select the units around which the plant will be built. Here, capacity and other performance figures for the units must be considered. And it may be that the

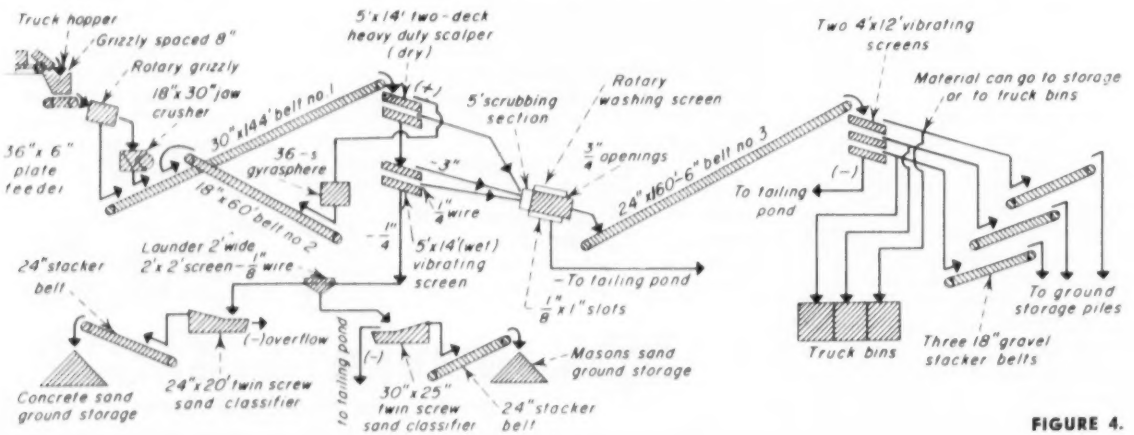
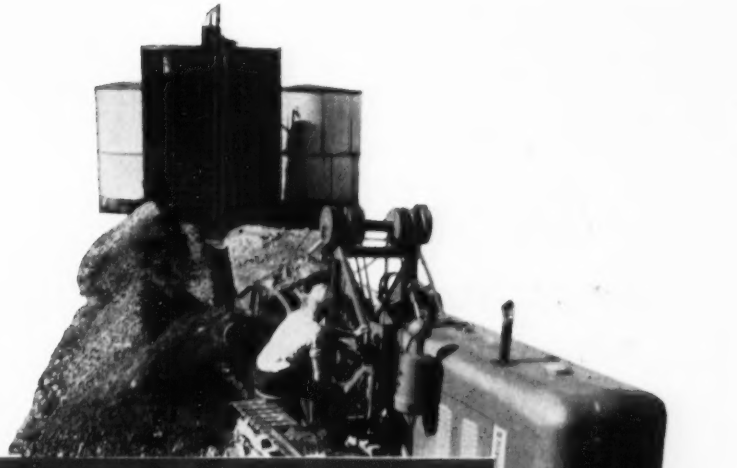


FIGURE 4.

pitch in and ditch...



THE PAYOFF POWER IS CHRYSLER

This Gar Wood-Buckeye 308 Ditcher is designed for really rugged digging. Cross-country pipelining—the toughest gas, water, sewer, conduit and cable lines. Jobs that require day after day after day of high production service. That's why it's equipped with two-speed excavator drive, hydraulic conveyor drive, front drive transmission . . . powered by Chrysler!

CHRYSLER INDUSTRIAL 32

in-line 6 Engine (265 cu. in. displacement) powers Gar Wood-Buckeye Ditchers—and many other makes of equipment in the construction and materials handling field. There are five Chrysler in-line 6s, two V-8s—ranging from 230 to 413 cu. inch displacement. For detailed information about Chrysler Industrial Power write: *Dept. F3, Industrial Engine Division, Chrysler Corporation, Detroit 31, Mich.*

Chrysler
INDUSTRIAL ENGINES

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

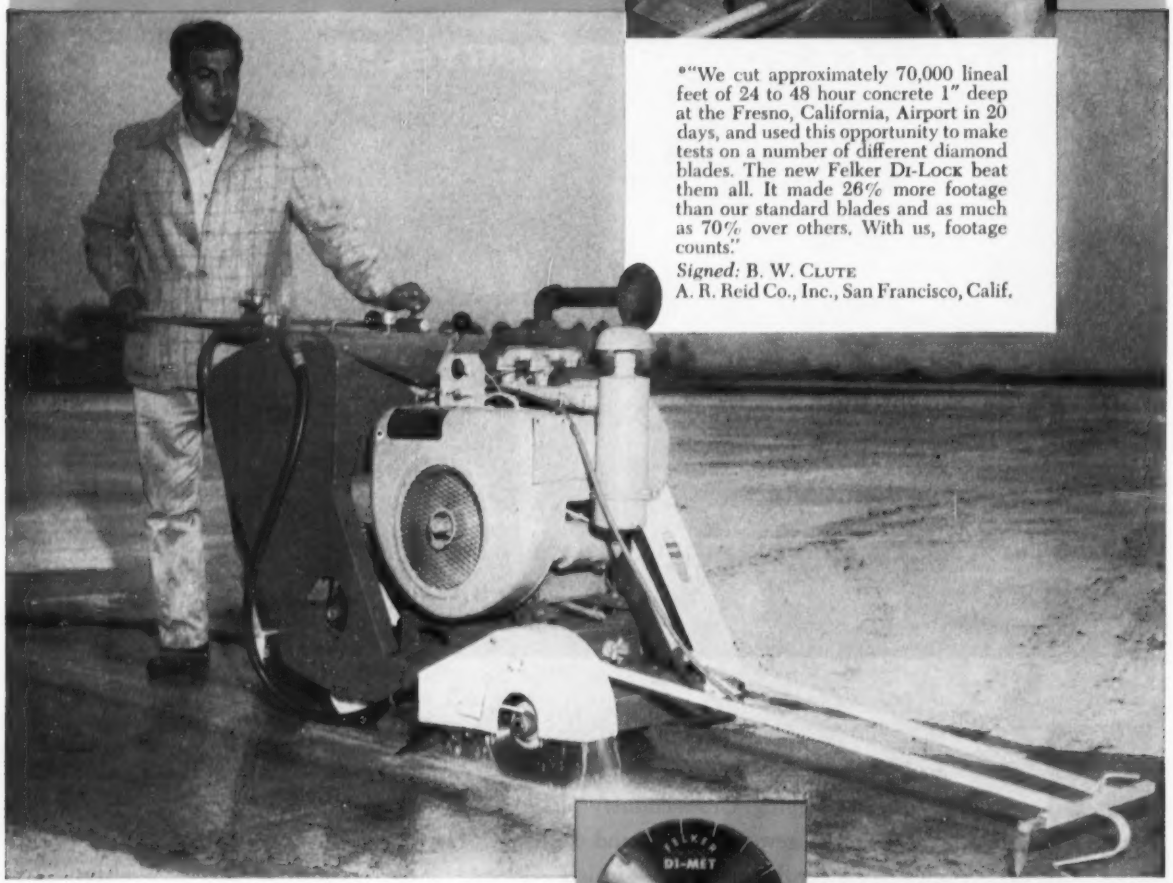
NEW FELKER

di-lock

MOST OUTSTANDING
Diamond Blade Tested
on concrete cutting job, Fresno, California, Airport!*

*"We cut approximately 70,000 lineal feet of 24 to 48 hour concrete 1" deep at the Fresno, California, Airport in 20 days, and used this opportunity to make tests on a number of different diamond blades. The new Felker Di-Lock beat them all. It made 26% more footage than our standard blades and as much as 70% over others. With us, footage counts."

Signed: B. W. Clute
A. R. Reid Co., Inc., San Francisco, Calif.



New Felker Model 257 25 H.P. Concrete Cutter
Other models available from 7½ to 36 H.P.

Here's the story on Felker Di-Lock's superior footage: Di-Lock diamond blades use a different bonding metal in the segments. It grips diamond particles much tighter and retains them longer. Voids, gas pockets, and granularity of metal are eliminated. The new segments are dense and solid—like rolled steel plate, and the bond wraps around every contour and face of each diamond. *This means diamonds stay in the blade and do more work, cut footage costs, eliminate shutdowns!*

If you haven't tried Felker Di-Locks, do it today! Your Felker Distributor can supply you—or write for details.

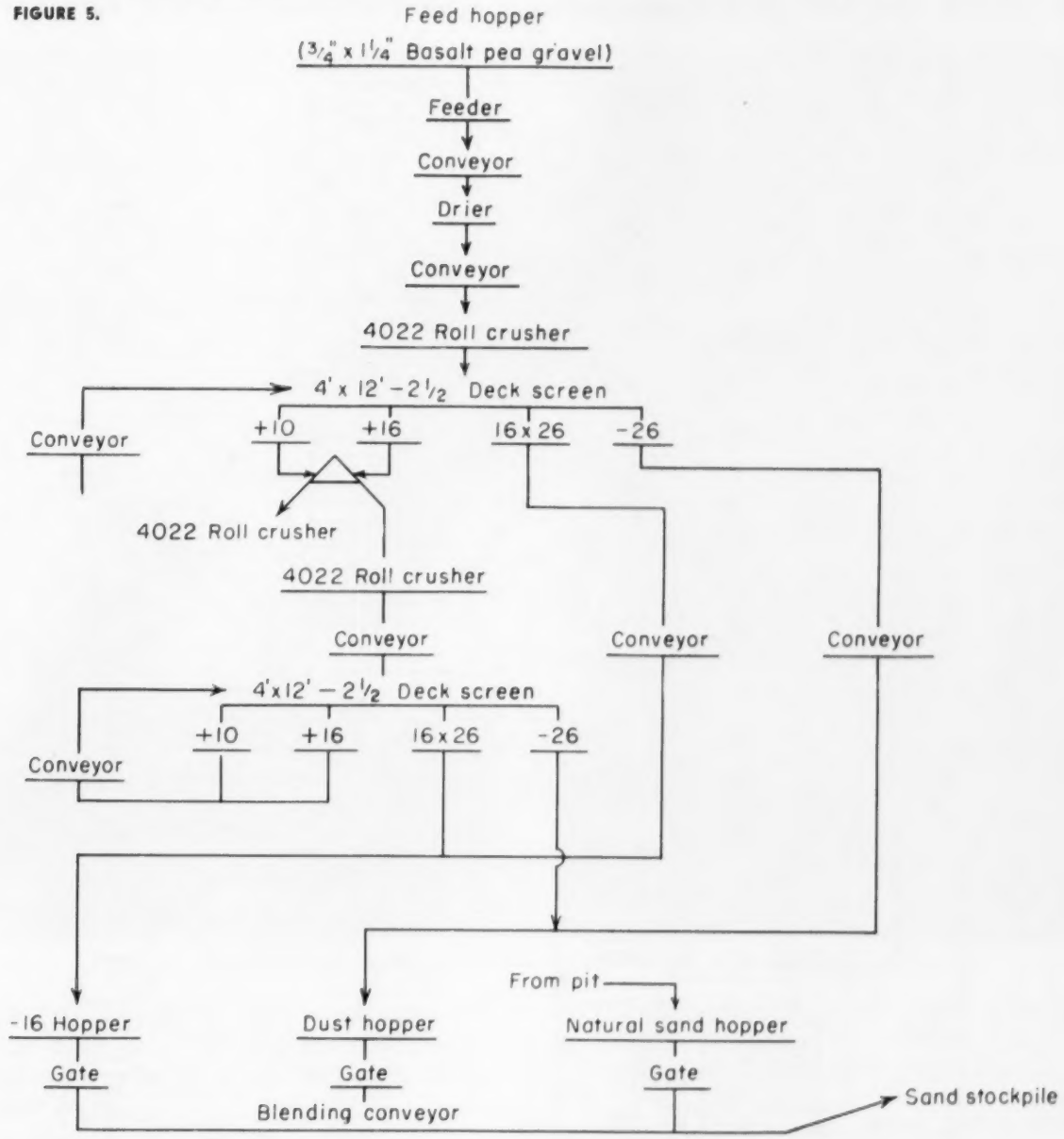
FELKER DI-MET SINCE 1924

Remember, Felker means footage!

FELKER MANUFACTURING CO.
Torrance, California

First in Diamond Cut-Off Blades!

FIGURE 5.



flow diagram will have to be reworked to meet the performance limitations of the units selected. On the other hand, the data may show that other types of units should be specified in place of those originally planned for.

Once the flow has been finalized and the units to correspond have been determined, it is necessary to lay out the plant structurally (both in plan and elevation) with sufficient dimensions, unit sizes, etc., to enable economical fabrication and erection. Enormous savings in erection costs can be made by judicious planning and study of details at the drafting table. This will involve the terrain of the land on which the plant will be erected and attention to footings and foundations. An example of this type planning is shown in Fig. 7, where advantage has been taken of the terrain to enable simple, economical arrangements of units and an efficient system of conveyors.

In this plant, note these design considerations:

a. Both crushers located on high terrain, over the same conveyor, easy to get at for servicing, and enabling less slope in both conveyors.
b. More than adequate clearance for height under the bins, with minimum slope of conveyors.
c. Arrangement of screens over bins to facilitate discharge of material to bins.
d. Low headroom for screens by placing them in tandem over bins.
e. Bins in a row, instead of in a cluster, so that a blending conveyor can be used if desired.
f. Over-all short space required to contain the entire plant.
g. Ease with which good drain-

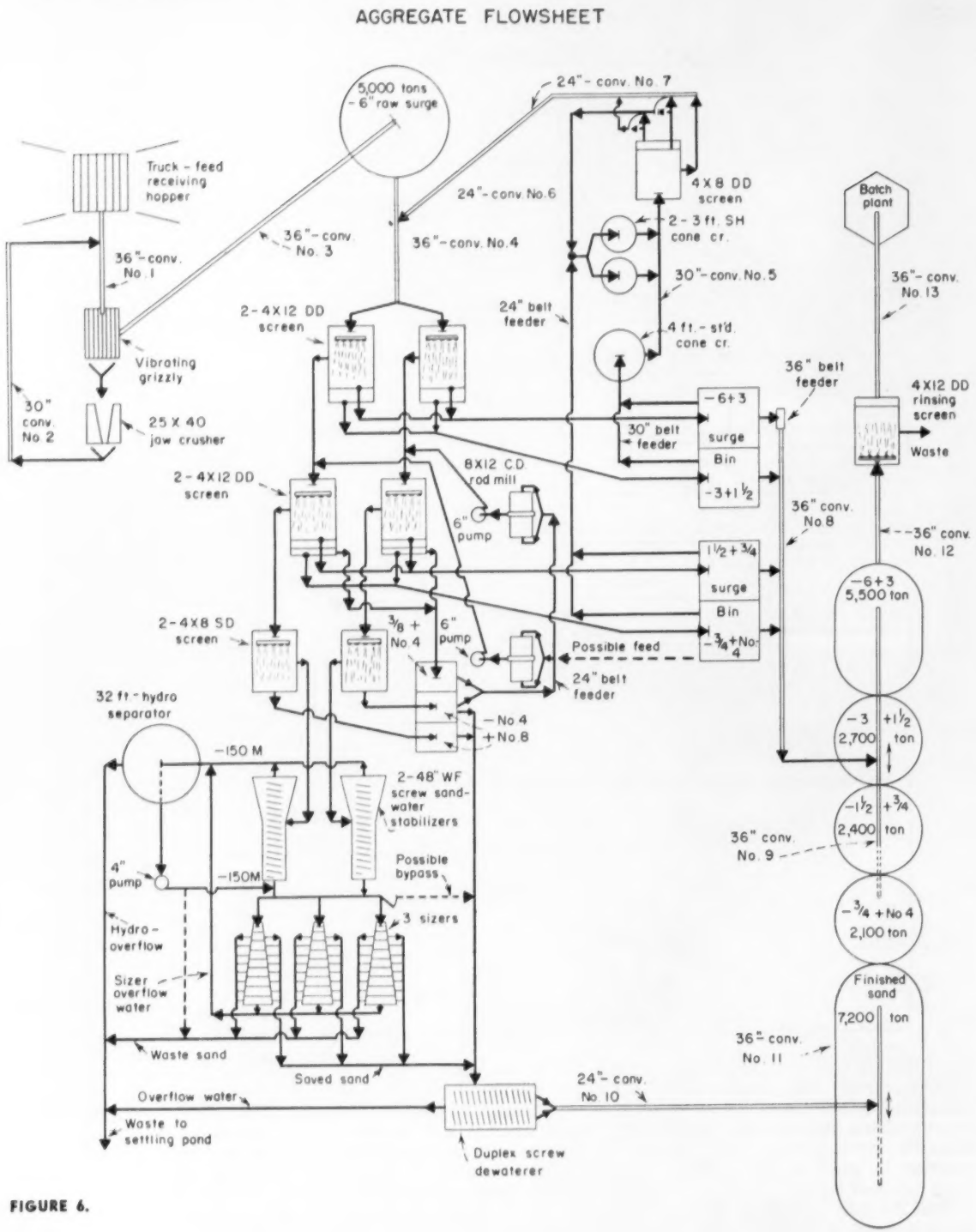

AGGREGATE FLOWSHEET
5,000 tons - 6" raw surge
24" - conv. No. 7
Truck - feed receiving hopper
24" - conv. No. 6
4 X 8 DD screen
2 - 3 ft. SH cone cr.
36" - conv. No. 3
36" - conv. No. 4
Batch plant
36" - conv. No. 1
30" - conv. No. 5
36" - conv. No. 13
2 - 4 X 12 DD screen
24" belt feeder
4 ft. - std. cone cr.
Vibrating grizzly
36" belt feeder
4 X 12 DD rinsing screen
30" conv. No. 2
25 X 40 jaw crusher
- 6 + 3 surge Bin
30" belt feeder
Waste
8 X 12 CD rod mill
2 - 4 X 12 DD screen
36" conv. No. 8
6" pump
- 3 + 1 1/2
36" conv. No. 12
1 1/2 + 3/4 surge Bin
- 6 + 3 5,500 ton
2 - 4 X 8 SD screen
3/8 + No. 4
6" pump
Possible feed
- 3/4 + No. 4
24" belt feeder
32 ft. - hydro separator
- No. 4 + No. 8
- 3 + 1 1/2 2,700 ton
- 150 M
2 - 48" WF screw sand-water stabilizers
- 1 1/2 + 3/4 2,400 ton
36" conv. No. 9
4" pump
- 150 M
Possible bypass
- 3/4 + No. 4 2,100 ton
3 sizers
Hydro - overflow
Finished sand 7,200 ton
Sizer overflow water
36" conv. No. 11
Waste sand
Saved sand
24" - conv. No. 10
Overflow water
Waste to settling pond
Duplex screw dewaterer

FIGURE 6.

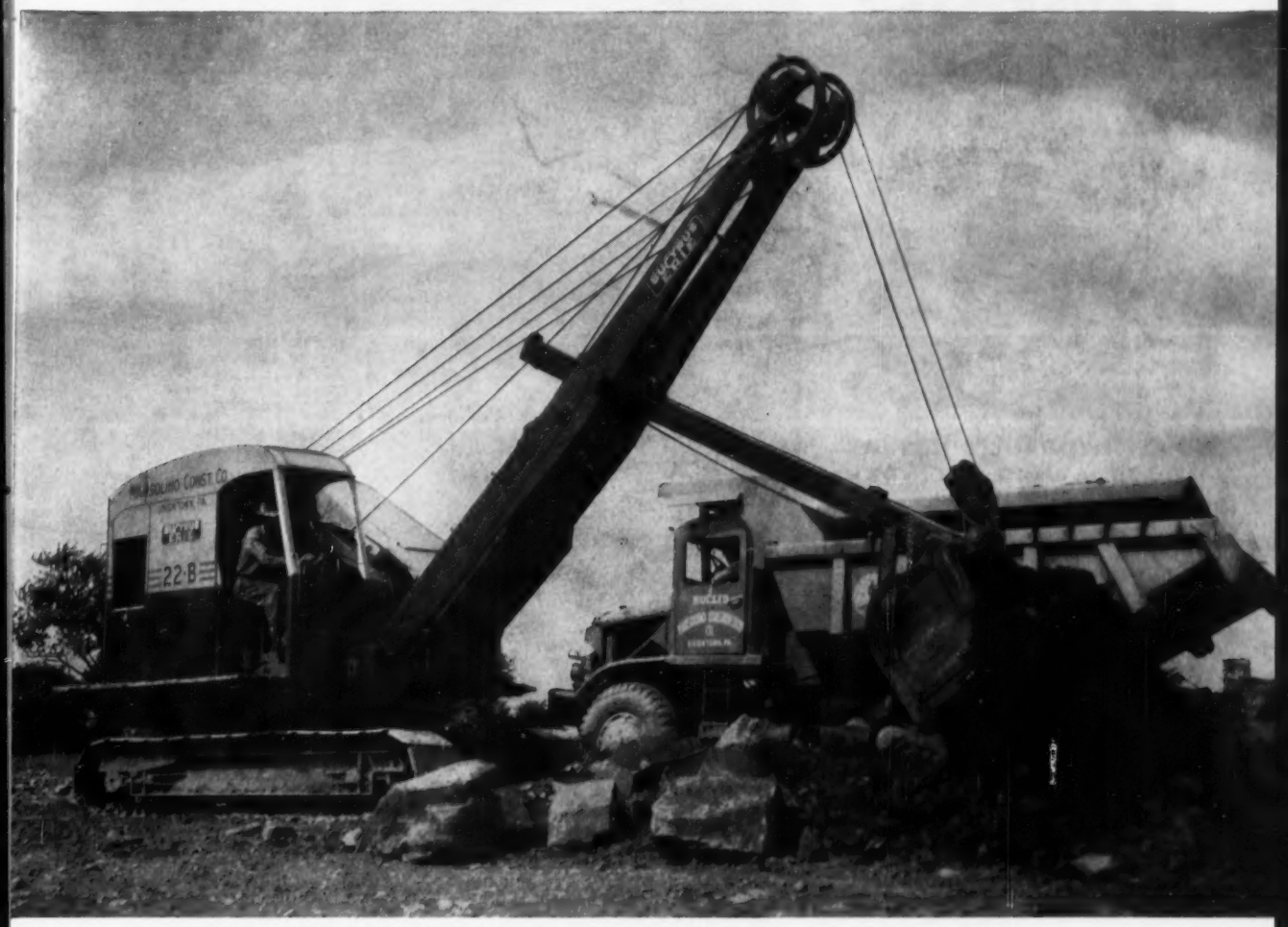
age can be accomplished under bins if necessary.

h. Facility for loading three trucks simultaneously without interference between them.

The screen and bin arrangement in this plant is particularly noteworthy. It would be well to study it separately.

Had the two screens been placed one above the other, as of course they could have been, the whole screening structure would have had to be higher. Also, a longer feed conveyor from the crushers would have been required, and the secondary crusher would have had to

6 ways Bucyrus-Erie Excavators SAVE you money to MAKE you more money



This ¾-yd. 22-B loads dirt and rock fill for a turnpike extension in Pennsylvania.

It isn't just through their extra output ability that Bucyrus-Erie excavators help you make money. They *save* you money in many ways, thus adding to your profits.

1 Save downtime. Cold, hard figures kept by users show that a Bucyrus-Erie stays on the job more hours, helps get the maximum work out of companion equipment.

2 Cost less to maintain. There are actually fewer parts in a Bucyrus-Erie excavator to wear out, and they are built to last — which adds up to lower cost maintenance.

3 Save fuel. Elimination of deadweight through proper design means less power wasted swinging useless metal. Smooth, direct flow of power means more of it doing useful work.

4 Cut conversion time. It's easy to convert from one front end to another. Quick convertibility gives you wider use of your machine, too.

5 Service faster. Many grease fittings are grouped at central, easily accessible points. Adjustments are easy to make — and "stay put."

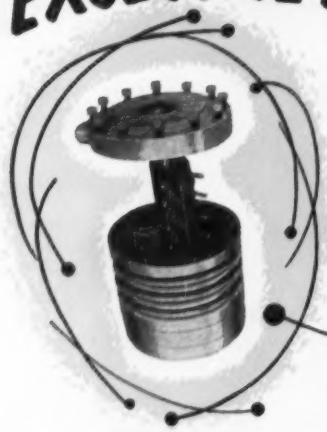
6 Last longer. It's a tradition in the excavator field that Bucyrus-Eries outlast other makes, cutting your depreciation and replacement costs.

These and other savings add significantly to the profits from Bucyrus-Erie excavators. Why not learn the whole Bucyrus-Erie profit story — see your distributor or write direct for more information. 314E57C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

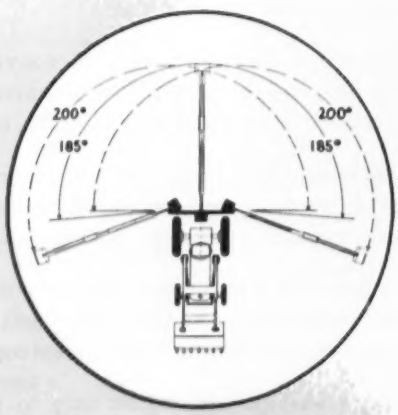
EXCLUSIVE!



NEW HYDRAULIC ROTARY BOOM SWING CYLINDER

DISCOVER DAVIS ...AND WHY IT WILL DO WHAT NO OTHER BACK-HOE CAN DO!

FLUSH DIGGING... with a 200° continuous operating arc... that's what the new Davis Model 210 does that no other machine can do. It will dig flush alongside buildings, fences, and other installations where you normally have to dig by hand! The exclusive hydraulic rotary boom swing cylinder and interchangeable mounting points on the frame are the key to its profit-making operation. The simple, compact cylinder with only one moving part replaces conventional swing rams, cables, and the inherent limitations as employed by all other back-hoes. The entire mast and boom assembly can be moved from center to either side for flush digging. It has smooth starts...cushioned stops, and because hydraulic pressure is constant, it permits a steady, controlled swing all the way around. This, plus all the other features that have made Davis America's largest selling back-hoe – right-angle operation, rotary seat, vertical stabilizer, 13′ depth, and ***7,000 pounds of breakaway*** mean more jobs...more profit...less time on each job. Get complete information on both the new 210 and the popular 185 Davis Back-hoes today. Available for most popular tractors and 1-ton or larger flat-bed trucks.



PROVIDES 200° CONTINUOUS OPERATING ARC

This diagram illustrates the degrees of continuous operating arc from each of the three mounting locations – 200° when side mounted, or 185° center mounted. Has no pins to change or cable to break.

Davis Back-hoes and Loaders are sold and serviced everywhere in the U. S. A. and Canada by better dealers!

FOR THE NAME OF YOUR NEAREST DEALER CALL WESTERN UNION BY NUMBER, AND ASK FOR OPERATOR 25 ... *or write direct*

MID-WESTERN INDUSTRIES, INC.
1009 SOUTH WEST STREET DEPT. M WICHITA 15, KANSAS

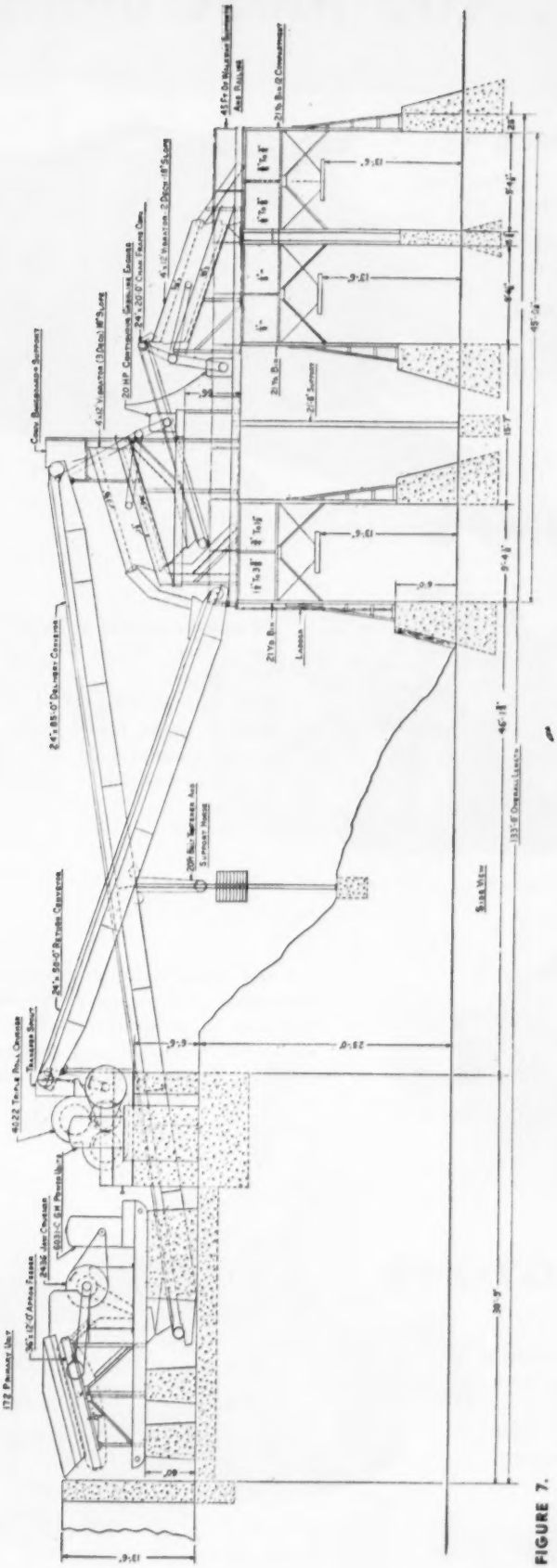


FIGURE 7.

PRODUCING AGGREGATES... Continued

be placed higher on its foundation for material clearance under the crusher. Delivery of material to the bins would have been complicated, even had they been placed in a cluster, and it is quite likely that the tendency toward segregation in the bins would have been increased because of side delivery.

Stock Piles and Surge Piles

Stock piles or bins are, of course, necessary to permit uninterrupted operation of the aggregates plant unless the demand is constant and there are always enough trucks available to haul away the material as it is made. The usefulness of stockpiles is evident too, where it becomes necessary to change mixes or gradations of product for various uses. Further, they permit production during lulls to take care of peak demands. They help even out production from day to day. Also, they enable the plant to operate with fewer stoppages and less down-time for changes in crusher settings and screen sizes by permitting runs of certain sizes of products in larger quantities to be drawn on as needed. They are insurance against lengthy job hold-ups in case of required plant repairs.

Surge piles are in effect stockpiles, but with a special significance. They are considered to be bulk storage of partially processed materials on hand for further processing. Most generally, surge piles are the product of the primary crushers. They provide a source of material for the rest of the operation so that continuous production can be accomplished in case of trouble at the quarry or the primary plant, or if there is other delay of source material.

Stock piles and surge piles are most easily built up by conveyors. Such conveyors may be fixed, or they may be movable in an arc or laterally in the direction of the longitudinal axis of the piles. Movable conveyors may be on rails or on rubber-tired trucks. They may be suspended on towers, bents, or by cable. Stock piles may be built by hauling trucks or by dozer, also. Much depends on the nature and permanency of the installation and the amount and availability of auxiliary equipment on the job.

There is no one best method of delivering material from a stockpile. If the material is to be used

Euclid...the most complete

Euclid's expanded line of earthmoving equipment gives you the biggest range of types and capacities in the industry. Whatever your requirements may be—for a small grading job or a multi-million yard project—there are "Eucs" that will move more dirt at lower cost than other equipment.

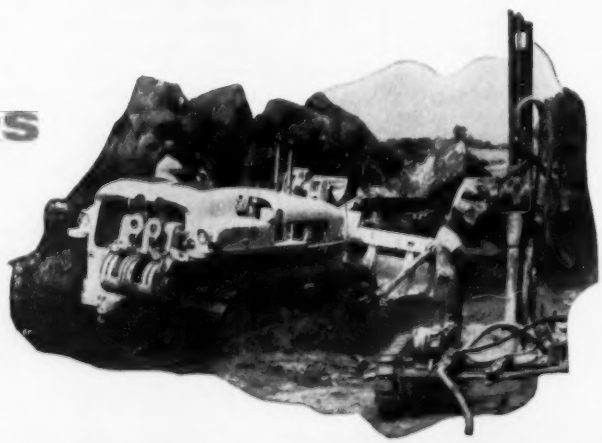
7 REAR DUMPS

Payload capacities of 10, 12, 18, 22, 35, 40 and 50 tons...128 to 600 total h.p....5 and 10-speed transmissions and Torqmatic Drives... top speeds with full payload up to 36 mph.... overhung engine tractor models have 12 and 35-ton capacity semi-trailer bodies that are interchangeable with 7 and 18-yd. scrapers.

A new concept in tractor design, Model TC-12 has exceptional maneuverability and ease of handling. Each track has a separate power train with 218 h.p. engine and Torqmatic Drive for a total of 436 h.p.... speeds up to 8 mph. forward or reverse..."on-the-go" shifting...8 track rollers and 27" track shoes for balance and stability.

CRAWLER TRACTORS

The TC-12 is the first production model of a complete line of crawler tractors now being developed and field tested by Euclid. It can be equipped with hydraulic or cable controlled blades and other heavy duty attachments.

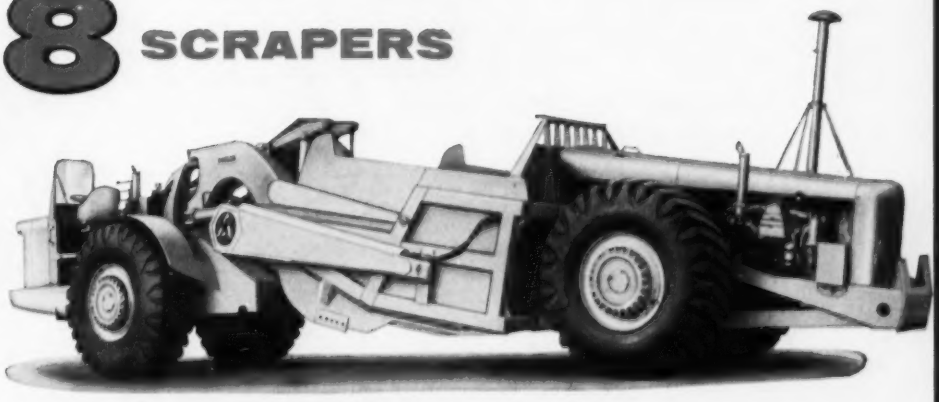


EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

line of JOB·PROVED earthmovers

Three types of scrapers with struck capacities of 7 to 24 yds.—9 to 32 yds. heaped . . . 143 to 518 total h.p. . . . standard gear transmissions and Torqmatic Drive . . . hydraulic lever action of bowl, apron and ejector . . . overhung engine scrapers have struck capacities of 7, 12 and 18 cu. yds. . . . 4-wheel tractor models carry 12, 18 and 24 yd. payloads struck.

8 SCRAPERS



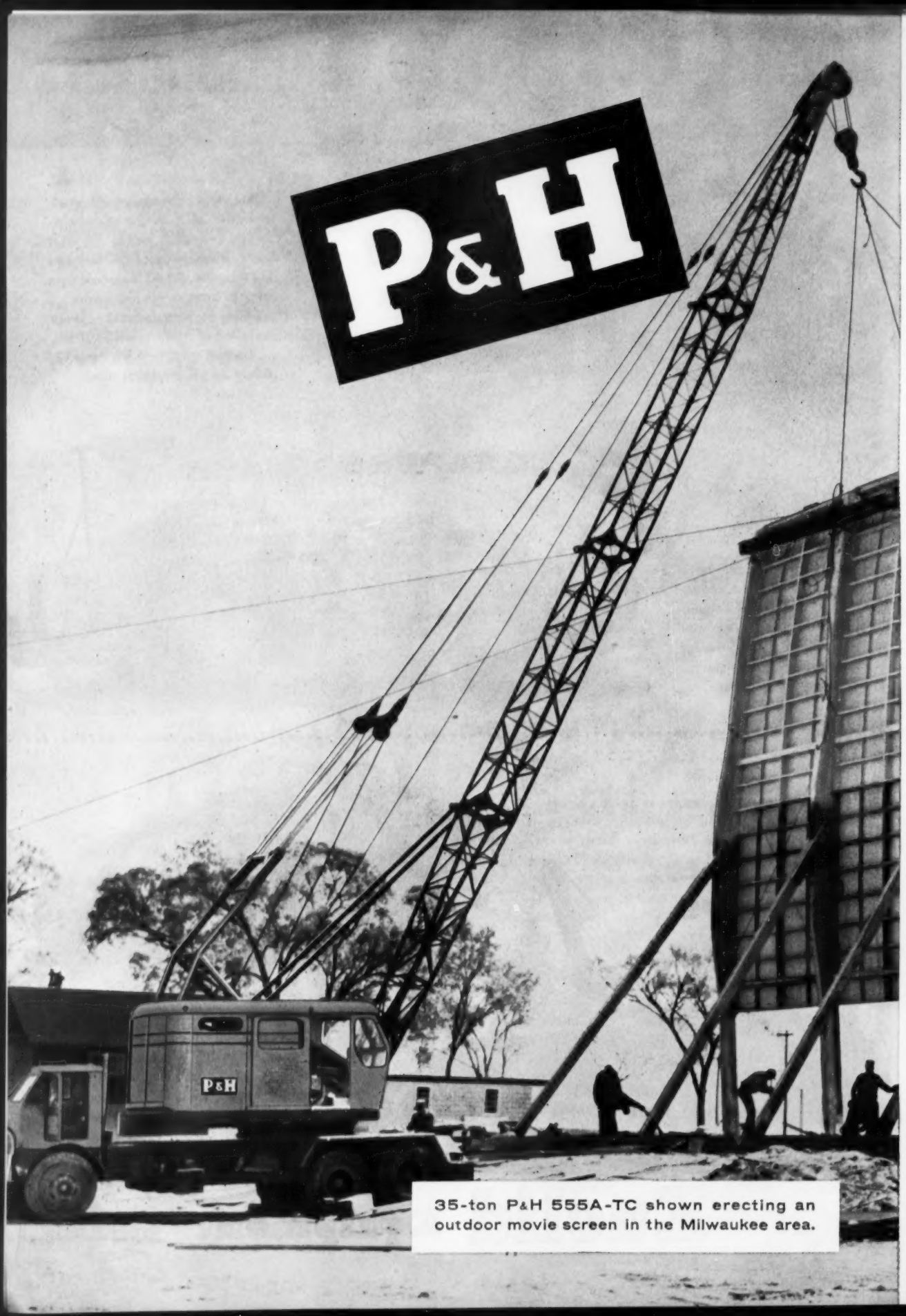
Twin-Power models have 18 and 24 yd. struck capacity—25 and 32 yds. heaped . . . two engines, each with separate Torqmatic Drive for tractor and scraper axles . . . 436 and 518 total h.p.

4 BOTTOM DUMPS

Struck payload capacities of 13, 17 and 25 yds.—19 to 38 yds. heaped . . . 218 and 300 h.p. . . . Torqmatic Drive and standard gear transmissions . . . loaded speeds to 34 mph. . . . overhung engine Model S-12 has 13-yd. struck capacity.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



35-ton P&H 555A-TC shown erecting an outdoor movie screen in the Milwaukee area.

Costs $89 a day...earns $160*

with 35-ton P&H "Job-Designed" Crane

In the 35-ton classification, there are more truck cranes with the familiar P&H trade mark than any other make—BY FAR! One reason for this unique acceptance is the fact that operators *know* P&H designs and builds both the upper and carrier expressly for 35-ton needs—giving owners a single source of responsibility.

An example of the P&H 555A-TC putting in more working days at a higher profit is the rig pictured at the left. Customers of the John Hennes Trucking Co., Milwaukee, Wis., keep this 555A-TC constantly on the go. Records show this machine costs $89.26 a day (depreciation excluded) to operate and it earns $160.

This profitable production is typical of P&H performance. It comes from such features as the P&H Planetary Boom Hoist. Lowering is always done under power and the boom can be safely held in any position. *The P&H Planetary Boom Hoist is a standard feature.*

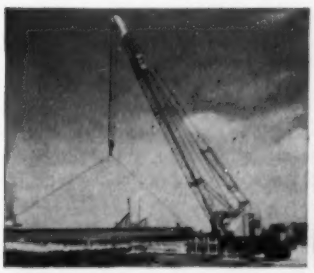
Another plus for P&H owners is the extra-strong booms supplied with the 555A-TC. Alloy steel and lattice construction makes these booms more rugged—and at the same time lighter. Goose-neck type, open-throat booms provide maximum boom load clearance.

Add to these exclusive features the famed P&H all-welded construction and live roller circle and you, too, will see why the P&H 555A-TC is the most popular truck crane in the 35-ton field. Call your P&H dealer. No matter what the capacity of your jobs, he can show you a P&H model to help you dig or lift more at a lower cost.

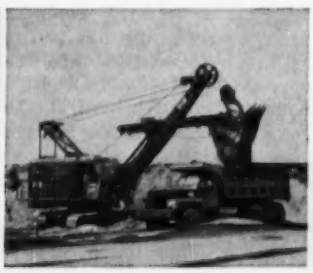
Harnischfeger Corporation
Construction & Mining Division
Milwaukee 46, Wisconsin

THE P&H LINE Truck Cranes: 8, 10, 15, 20, 25, 30, 35 and 40 tons
Shovels: ½, ¾, 1½, 1¾, 2½ and 3½ yards

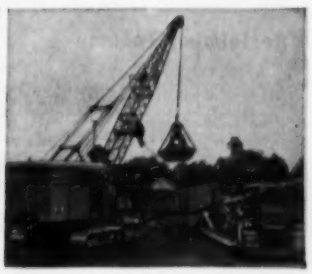
Across the country P&H machines lead the field in power, speed, flexibility and profitable performance



TEXAS
For handling loads up to 20 tons profitably there is the P&H 255A-TC. Here is Brown & Root's third Model 255A-TC shown at work on construction of off-shore drilling platform at their Marine Division Shipyard.



CONNECTICUT
Earthmoving Service & Equip. Corp., profits from the greater strength of the 2½ yd. P&H 955A in moving tremendous quantities of borrow. Job is part of new Connecticut Turnpike.



VIRGINIA
In the ¾ yard class, Commonwealth Sand & Gravel Co. of Richmond depends on the speed and accuracy of the P&H 255A for increased production. It is shown here equipped with 40 foot boom and ¾ yard clamshell bucket.

***Write today for Verified P&H Cost-Performance Facts**

Harnischfeger Corporation, Dept. 502
Construction & Mining Division
Milwaukee 46, Wisconsin

Gentlemen:
Please send me field report No. 5504 on the 35-ton P&H 555A-TC.

*Name*_____

*Title*_____

*Firm*_____

*Street*_____

*City*_____ *Zone*_____ *State*_____

Chart Showing Base Diameter of Conical Piles of Sand or Gravel When Height or Volume is Known

Data by E. Lee Heidenreich, Jr., Newburgh, N.Y.

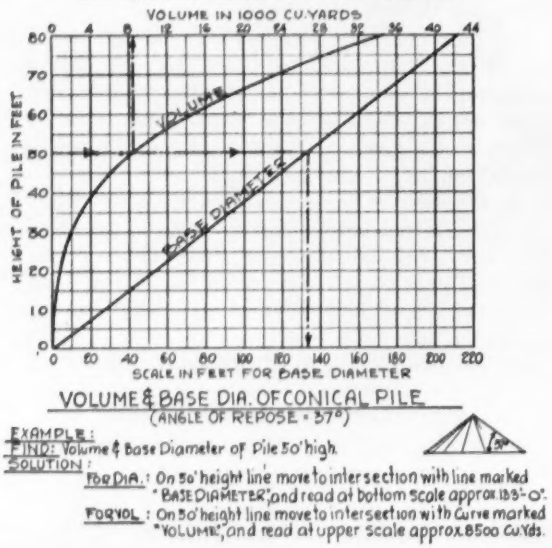

VOLUME IN 1000 CU.YARDS
HEIGHT OF PILE IN FEET
VOLUME
BASE DIAMETER
SCALE IN FEET FOR BASE DIAMETER
VOLUME & BASE DIA. OF CONICAL PILE
(ANGLE OF REPOSE = 37°)
EXAMPLE:
FIND: Volume & Base Diameter of Pile 50' high.
SOLUTION:
FOR DIA.: On 50' height line move to intersection with line marked "BASE DIAMETER" and read at bottom scale approx 133'-0".
FOR VOL.: On 50' height line move to intersection with curve marked "VOLUME" and read at upper scale approx 8500 cu.Yds.

FIGURE 8.

Chart Showing Volume of Half Cones Cut in Right Angles to Base

(For Use in Figuring Stock Piles of Sand and Gravel)

Data by E. Lee Heidenreich, Jr., Newburgh, N. Y.

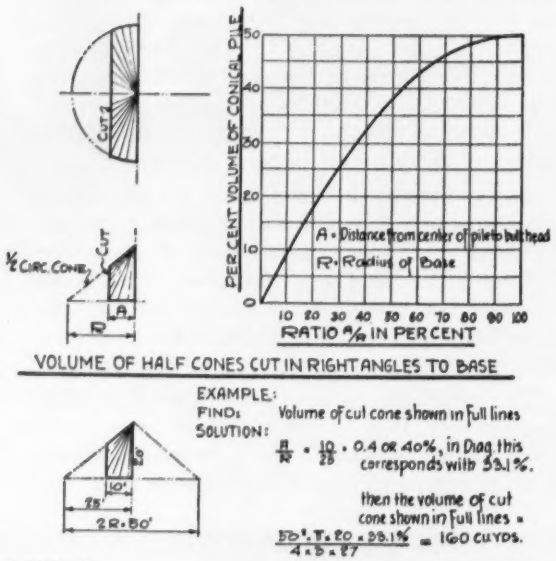

CUT
½ CIRC. CONE
CUT
A
R
PER CENT VOLUME OF CONICAL PILE
A = Distance from center of pile to bolthead
R = Radius of Base
RATIO A/R IN PERCENT
VOLUME OF HALF CONES CUT IN RIGHT ANGLES TO BASE
EXAMPLE:
FIND: Volume of cut cone shown in Full lines
SOLUTION:
A/R = 10/25 = 0.4 OR 40%, in Diag. this corresponds with 33.1%.
then the volume of cut cone shown in Full lines =
33.1% × .20 × 27 / 4 = 160 CU.YDS.
40'
25'
2R=50'

FIGURE 9.

in an asphalt plant, for example, it can conveniently be handled by a clam shell bucket to the feeder hopper. Or a feeder can be installed under a trap and the piled material bulldozed into the feeder.

Reclaiming Tunnels

If a concrete batch plant is set up close to the aggregates plant, it might be most economical and satisfactory to build a tunnel under the area over which the stockpiles will be built. One such system is shown in Fig. 1.

Several openings under each pile to feed on to the conveyor are desirable. This gives a better flow of more uniform material and provides better loading of the conveyor. Gates to open and close the openings are necessary, of course, and it is well to install feeders over the conveyor for control of the quantity drawn from each pile. This is particularly true when specific formulas for blending different sizes of aggregates are involved. In areas where cold weather might cause freezing up of gates, it is customary to provide heat to the gates, electrically or by other means. Air control of gates is now popular.

Charts and data in Fig. 8 and 9 indicate how to figure the amount of material in stock piles.

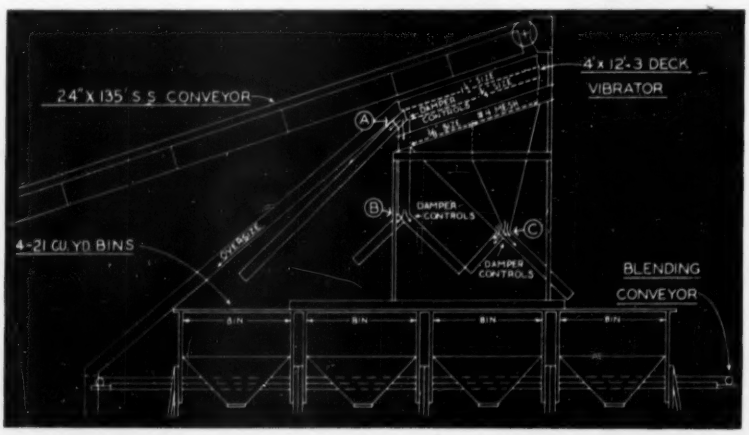
Multiple Sizing and Blending

With a greater number of aggregates specifications to be met, with closer limitations on the respective gradations and stricter inspections to ensure compliance, multiple screening has greater significance. A method of determining the gradation of product from pressure type crushers, and the screen areas required for the separations, was outlined in the preceding chapter. Fig. 7 shows two screens having three decks and two decks, respectively.

The top deck of the first screen has 3⅝-in. openings for return of oversize to the triple-roll crusher. The second deck has 1½-in. openings providing a 1½- to 3⅝-in. product. The third deck, with ¾-in. openings, provides a ¾- to 1½-in. product. Throughs are ¾-in. minus and are conveyed to the top deck of the second screen, which has ⅜-in. openings. This deck yields a ⅜- to ¾-in. product. The bottom deck, having ⅛-in. openings, provides a ⅛- to ⅜-in. product, and the throughs become a fifth product of ⅛-in. minus.

To calculate the screening areas required in the second screen it is only necessary to consider the tonnage passed through the bottom

FIGURE 10.



Muck 30 feet deep where a road must go!

...BUT GERKE AND CITIES SERVICE KEEP THE JOB ON SCHEDULE

North of Ladysmith, Wisconsin, Route 27 was practically floating in the swampland it cut through.

To Lawrence Gerke—sometimes known as "Gerke from Merrill"—went the difficult repair job. A job that involved working in a virtual lake, with muck and water up to 30 feet deep!

Under these conditions it would seem almost impossible not to fall behind the three-month schedule for completion . . . but "impossible" isn't in Gerke's vocabulary. And so, he pulled the job through, directly on schedule.

"But I couldn't have done it without the flawless performance of Cities Service lubricants," says the quiet man from Merrill. "Throughout the rugged months of work in muck and marsh, my equipment operated constantly without a single lubrication failure, thanks to Cities Service C-500 Motor Oil and Trojan Greases. When the chips are down, Cities Service comes through."

Mr. Gerke puts it in a nutshell. You can always count on Cities Service when the chips are down. But why wait until then? Why not start using Cities Service lubricants this week? A Cities Service Lubrication Engineer will gladly help you select the precise type for your equipment. Or, if you'd like more information, write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

"Gerke from Merrill" is the way Lawrence Gerke likes to be known. But he's better known for getting things done . . . and he uses Cities Service lubricants for the same purpose.

200,000 Yards of Borrow Dirt fill marsh where 100,000 yds. of muck were removed. Despite grueling work and tight schedule, Gerke finished on time . . . without a lubrication failure!

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

NEW B Tournapull

New, low, wide B Fullpak scraper gets *big* loads *fast!* This tested design is fully proven for fast and easy loading — has been in world-wide service for over a year on the modern 18-yd. Model C Tournapull. This companion 27-yard Fullpak loads just as easy and heaps just as fast. Check it against any of today's big production units. Compare it for lowest-net-cost-per-yard.

Loads faster . . . boils better . . . offers many advantages:

The "low and wide" design of the new B Fullpak scraper gets full-capacity, low-void pay-loads fast. Side-sheets curve up in center to reduce spillage and deflect material into corners of apron and tailgate. Tailgate has a curved top to roll material into the heap, fill all corners. High, deeply curved apron adds dirt capacity and carries a big part of load forward in its "belly", for better weight distribution, lower center of gravity, and improved stability on any terrain.

Low push-block gives direct-line application of power from pusher to blade. Bowl bottom has only 1° rise. In loading, dirt flow is nearly horizontal — big loads pack in fast.

Powerful, improved 293 hp Model B Tournapull prime-mover has the famous L-W power-transfer differential that keeps pulling-traction on both drive wheels at all times. Power-steer through geared king-pin permits 90° turns. This positive king-pin steer permits swinging prime-mover to let drive wheels find better footing and "walk" out of mud and loose sand.

Push-button electric control and wheel-operated electric steer make handling easy. All-weather electric motors at points of action give instant steering and scraper control.

Heavy-duty transmission provides ten gear ratios, from 2.6 to 28.4 mph. Low gear matches pusher speed, enables "B" to help itself in loading, gives full lugging power for pulling through soft footing. This combination of 10 speeds, plus clutch-brake for fast shifting, means hauling at higher speeds... more pay-yards per hour.

For full details on this new 27-yd. B Tournapull, see your LeTourneau-Westinghouse Distributor. Analyze your earthmoving requirements. See how this BIG "B" with new *fast-loading* Fullpak scraper can earn big dividends for you on future work.

Tournatractors

Rear-Dumps

Adams Graders

Adams TravelLoaders

Bottom-Dumps, Cranes, Flat-Beds, Elegraders, Rollers, Snow-Plows, Logging Arches, Scrapers, PCU's, Rooters, Root Rakes, Wire Rope.

with 27-yd. FULLPAK scraper

1. Low, wide Fullpak scraper: 27-cu. yds. heaped, 19.1-cu. yds. struck, 32.5 tons.
2. High-lift apron. Big opening (7'1" high x 10') makes sure anything that goes in will come out!
3. Deflectors on yoke arms, and smooth, wide apron side-arms, prevent trapping of rocks, and other chunky materials that might slow up operations and involve manual clearing.
4. Curved deflector on tailgate rolls dirt into center of bowl for bigger pay-load.
5. Streamlined bowl has no obstructions to interfere with boiling flow of material.
6. Large diameter cable-drum on apron-hoist permits fast spooling without kinking, increases rope life.
7. Power steering wheel gives easy handling through positive electric control.
8. Cockpit is raised to give operator clear visibility. He can see both load and pusher at all times.
9. Scraper wheels are easily removed, and interchangeable with wheels on prime-mover. Outboard bearings give stable load support.
10. Multiple-disc air brakes, and sturdy brake elements, give quick stopping power, longer service.
11. Heavy cross-tube ties side sheets rigidly together on low, wide Fullpak bowl.
12. Constant voltage transformer provides accurate control at low engine RPM.
13. Quick-release clutch and fast electric-hoist allow rapid bowl "pumping".
14. Large push-plate, of all-welded, reinforced box-type construction, provides big pusher target, keeps contact over uneven terrain.

Brief Specifications for New B Fullpak Tournapull:

Capacity: Tons 32.5
Heaped, cu. yds. 27
Struck, cu. yds. 19.1

Power: 293 HP Cummins Diesel

Tires (Std.): Four 27 x 33 — 30-ply rating

Speeds: Ten forward 2.6 to 28.4 MPH
Two reverse 2.4 to 3.5 MPH

Turning Angle: 90° left or right

Width Required for 180° Turn: 39'10"

Control: Fingertip Electric

Brakes: Multiple-disc air brakes with 6552 sq. in. of braking surface

Dimensions:
Length .....44'0"
Width .....11'8½"
Height .....12'2¼"
Wheelbase .....26'10"

Shipping Weight (approx. lbs.) 68,900
(Specifications subject to change without notice.)

High-lift apron — positive ejection: Apron opens 7'1" to speed loading and unloading. Positive forward ejection of load wipes bowl clean of all materials, including mud and sticky clay. Low, wide bowl permits bigger heap, gives low center of gravity, provides greater stability in all working conditions. Smooth, wide side-arms and side-sheets of apron will not trap chunky materials that might hinder loading and unloading operations.

Low, wide bowl — heaps full-capacity, low-void pay-loads *fast*. Inside bowl is smooth, streamlined — has no reinforcement ribs to hinder dirt movement. Low push-block gives direct-line application of power from pusher to blade. Quick-release clutch, and fast, electric hoist, make possible rapid "pumping" of bowl for speedy loading of loose materials. Wheels inside cutting edge aid in precision grading, permit cutting against bank.

Tournatractor, Tournapull—Trademark Reg. U.S. Pat. Off. BP-1388-G, Fullpak, Adams—Trademark

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

TABLE I

Total Per Cent Passing

Sieve Size	2-in. to 1-in. Stone	1-in. to No. 4 Stone	Specification Limits
2½-in.	100		100
2 -in.	95	100	95-100
1 -in.	12	97	35-70
½-in.	4	38	10-30
No. 4	0	8	0-5

deck of the first screen, and proceed as outlined in Chapter 7.

Note that this installation does not provide for any blending of materials during production. Such blending may be desirable, however. A screening and spouting arrangement making this possible is shown in Fig. 10. Here a blending conveyor runs along side the bins so that various gradations of product are readily attainable.

A three-deck screen is used, the bottom deck equipped with two different screen openings. The upper half is No. 4 mesh, while the lower half has ⅜-in. openings. The middle deck has ¾-in. openings and the top deck 1½-in. openings.

The five sizes produced are: minus No. 4; minus ⅜-in. plus No. 4; minus ¾-in. plus ⅜-in.; minus 1½-in. plus ¾-in.; and plus 1½-in. The last is oversize returned to a secondary crusher. By turning damper controls A, B, and C, such other product sizes as minus ⅜-in., minus ¾-in., and minus 1½-in. may be alternately produced.

Blending of materials of different gradations to meet specific requirements may not be much of a problem to the experienced operator. Others may use a cut-and-try method, quite laborious, until the proper combination is found. In any event, it takes some figuring to arrive at a reasonable place to start. The best place is with a sieve analysis of the materials to be blended.

Suppose, for example, that two sizes of product are to be blended to meet a specification for concrete aggregate. The gradation of the two sizes and the specification limits are shown in TABLE I.

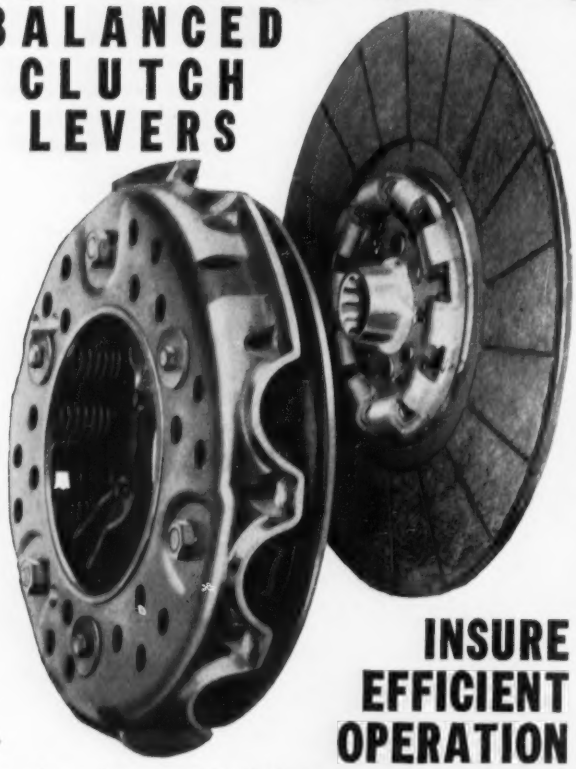
In this case we see by inspection that the coarser material has nothing passing a No. 4 sieve size. Since the specification limits do not require any No. 4, it might be advantageous to use more of the 2-in. minus material than of the minus 1-in. Further, this could prove to our advantage as it probably costs more per ton to produce the 1-in. minus. So let us begin by using 60% of the 2-in. minus and 40% of the 1-in. minus. This gives us a ratio of 3 to 2; that is, three tons of 2-in. minus to two tons of 1-in. minus.

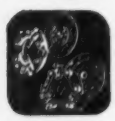
1. We see immediately that our requirement of 100% passing a 2½-in. sieve is met.
2. Next we consider the 2-in. sieve. Here we take 3 parts of 95% passing and 2 parts of 100% passing, add them and divide by 5:

$$\frac{3 \times 95\% + 2 \times 100\%}{5}, \text{ or}$$

continued on page 218

ROCKFORD
BALANCED CLUTCH LEVERS




Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

INSURE EFFICIENT OPERATION

The release levers in ROCKFORD clutches have been newly designed and are accurately balanced—so necessary in present day *high-speed, high-torque* engines. This is just one of several advantages ROCKFORD equipped motor vehicles feature in their late models.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
1331 Eighteenth Ave., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

On highway construction, road maintenance, ditching, terracing, finish grading, spreading road mix, land leveling, Adams 660 gives you the extra power, speed, and stamina to do all of these jobs *faster, better,* and at *lowest* cost.

Here's Why

you should check the performance capacity of your present heavy-duty graders

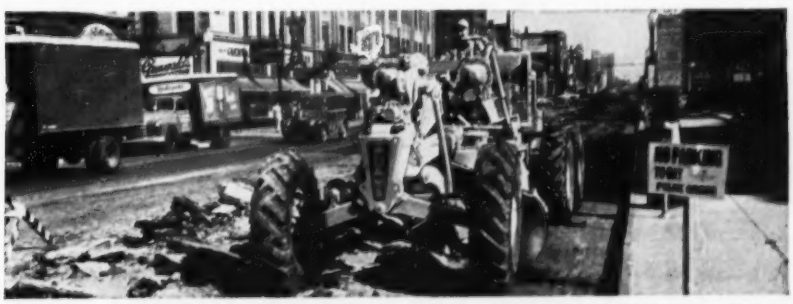
A lot has happened to the BIG grader field in the last year or two. For instance, if you have one of the 115 hp competitive graders that were "BIG" a few years ago, Adams 660 can now give you . . .

1. 30% more horsepower for deeper cuts, harder materials, faster cycles.
2. 29% more weight on drive wheels to apply more power, get more work done faster.
3. 35% higher travel speed to cut non-productive time between work assignments.
4. 117% higher reverse speed for more cycles per hour on shuttle grading.
5. 33% extra forward-speed-selection of power to match your load. With optional creeper gears, 83% extra choice in geared speeds (¼ to 26 mph) for increased accuracy and more effective application of power to difficult work.
6. 100% additional backing-speed selection that cuts waste time on return cycles, improves production on back-up grading.
7. 19% more front-axle clearance to work larger windrows and come in and out of ditches without interference.

In addition, all gears in the "660" constant-mesh transmission are on anti-friction bearings for easy operation, less wear, less maintenance cost. Adams rubber-mounting of engine keeps vibration from traveling to machine and operator. Automatic braking of "660" transmission, when applying hydraulic brakes to wheels, gives you safer operation with less wear on brake linings, and less pedal effort. Because "660" power-box clutches shift on ball bearings, you have less wear . . . easier, smoother-operating controls.

It's a good time now to review your grader equipment, a good year to make needed replacements before the big rush comes to fill needs of the huge expansion in new federal-financed highway construction. We'll be glad to help you make a fair and realistic analysis of your grader equipment and grader needs. We'll be glad to give you every opportunity to compare the Adams 660 . . . or smaller models . . . with your present equipment or with *any* competitive grader.

Wouldn't *now* be a good time to talk it over? We can give you better deliveries and better deals now than we can later on. Ask for full details.



Multiply the uses of your Adams grader with optional equipment: Scarifier, for ripping old asphalt and hard-packed surfaces; Bulldozer, for pushing debris from grade, backfilling around culverts, etc.; "V" Snow Plow and Wing, for cleaning highways and country roads of snow and ice; and Elegrader, for plowing and loading, or sidecasting materials.

A size ADAMS for every need

New POWER-Flow 660* — 190 hp with torque converter . . . . . 30,200 lbs.
Model 660* — 150 hp diesel . . . . . 30,050 lbs.
Model 550* — 123 hp diesel . . . . . 26,370 lbs.
Model 440* — 104 hp diesel . . . . . 24,080 lbs.
Model 330* — 80 hp diesel . . . . . 23,020 lbs.
Model 220 — 60 hp G.M. diesel 15,500 lbs.

*Your choice of General Motors or Cummins engine.

(Weights shown are usual working weights)

TraveLoader — A high-speed, heavy-duty, self-propelled, belt-type loader for picking up materials and loading into trucks from windrows or stockpiles, 55 hp gasoline or 60 hp diesel engine, 16,800 lbs.

Adams, POWER-Flow—Trademark AG-29-G-bwww

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

Give your engines a bonus in

BEARING STAMINA

In the toughest services, in high duty engines of all kinds, the value of extra bearing stamina really shows up . . . shows up in work records and in satisfied customers. And that's why there is no substitute for the plus performance engineered and manufactured into Monmouth Micro* and Clevite 77* bearings! Made by the world's leading manufacturer of engine bearings. Stocked by N.A.P.A. jobbers everywhere.

*The words Monmouth, Clevite and Micro are registered trade marks of Clevite Corporation.

Monmouth

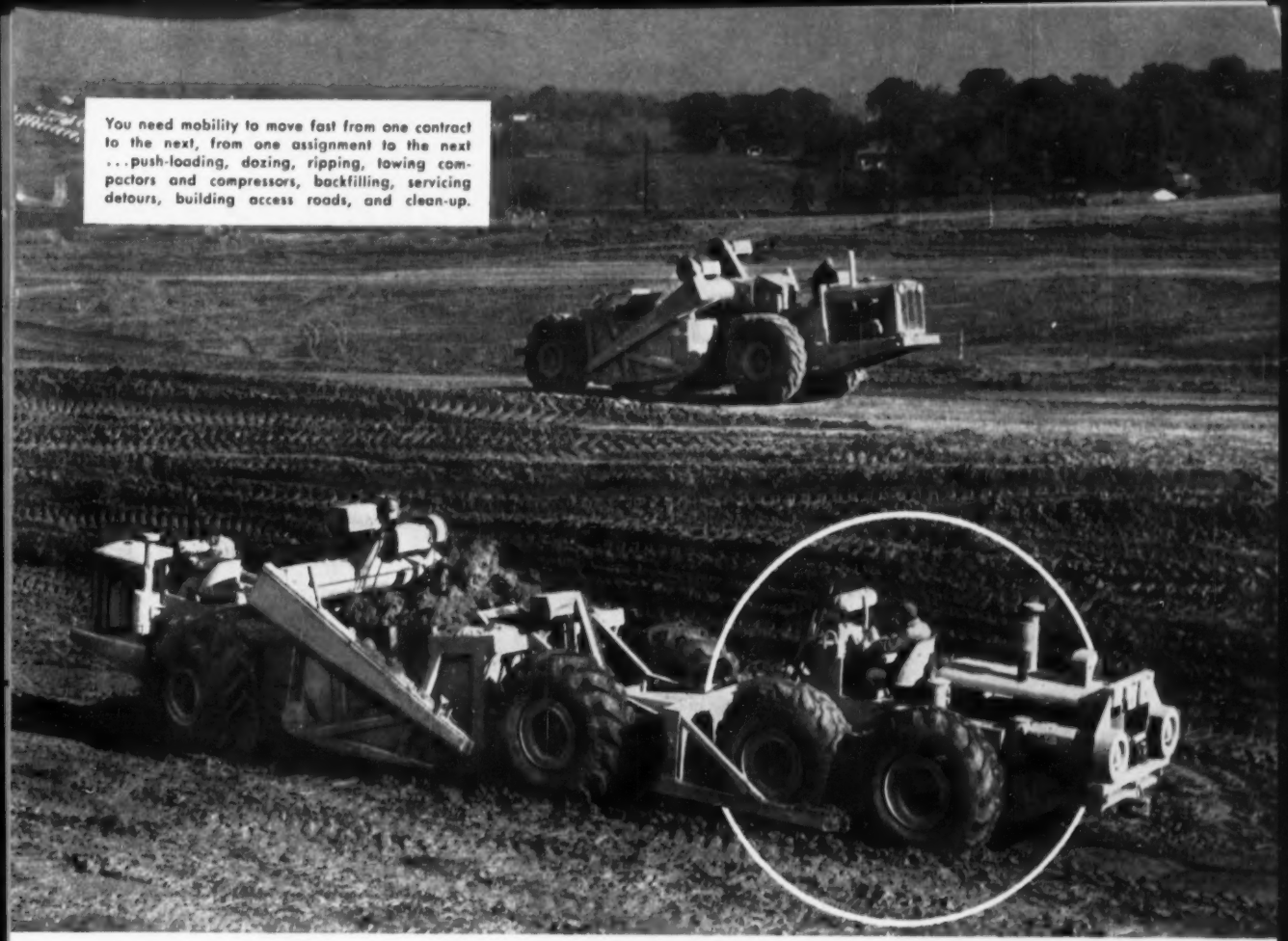
TRADE MARK

ENGINE BEARINGS

Clevite Service
The Cleveland Graphite Bronze Co.
Division of Clevite Corporation, Cleveland, Ohio, U.S.A.

NAPA Assurance of Quality

Your NAPA Jobber is a Good Man to Know!


You need mobility to move fast from one contract to the next, from one assignment to the next ...push-loading, dozing, ripping, towing compactors and compressors, backfilling, servicing detours, building access roads, and clean-up.

What mobility can mean to you

As your business grows bigger, each step involves taking jobs farther and farther apart .. working on wider and longer right-of-ways ... with bigger yardage that breaks into longer work-sections. Also as jobs become more complicated, and equipment more specialized, you find need for more moving around on the job to apply the best tool to each assignment.

So the need for mobility is increasing each year, while, at the same time, the cost of moving track-type equipment designed to slug-it-out in a limited area becomes higher and higher. A truck and trailer must be employed for each move of each piece of crawler equipment. It usually requires two men to load and unload the equipment from the low-boy. Over the years, your tractors have become bigger and heavier; it takes bigger and heavier trucks and trailers to haul them. Also it takes more time and costs more money.

Only a rubber-tired tractor can readily move job-to-job over highways under its own power and thus give you a bonus on each move it makes. Special routes are unnecessary — the rig on rubber rolls over city streets, across bridges, under low overpasses, at speeds to 17 mph. Also your rubber-tired tractor can frequently take time-saving short cuts that would be impossible for truck-and-trailer haul.

Rubber-tired units can save money on-the-job by handling scattered assignments and traveling between them in a matter of minutes. It can also fill in slack periods on your major construction projects with profitable outside rental or contract work.

Find out what mobility means in added profits for you. Compare the rubber-tired Tournatractor with your present crawlers. Write or call for a demonstration.

Tournatractor—Trademark Reg. U.S. Pat. Off. CT-1146-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

TABLE II

Total Per Cent Passing

Sieve Size	Fine Stone	Intermediate Stone	Coarse Aggregate	Specification Limits
1½			100	100
1 -in.		100	94	90-100
½-in.	100	96	10	40-70
No. 4	96	12	4	25-45
No. 10	72	4		15-30
No. 40	32			5-15
No. 200	12			2-6

MILLER *Tilt-Top* drive on loading . . . CUTS TIME between jobs!

MILLER "B" 10 ton $1250.* F.O.B. Milwaukee
Any optional equipment extra
*Plus Freight and 10% Federal Tax

ONE man can tilt, load . . . in less than TWO minutes!

Minutes saved each way—add up in a day. Or in a week, a month and a year for that matter. MILLER Tilt-Tops' fast loading and unloading, precise, easy backing, on-a-dime maneuverability, cuts time between every job . . . steps up *productive* time for men and machines. Why bother loading slow, more cumbersome trailers when shuttling tractors from one job to another with a MILLER is so easy, so fast . . . it can put more dollars in your pocket every month! And Tilt-Tops' equipment shuttling lets you cover more jobs with one rig . . . often saves duplicating expensive equipment.

For hauling tractors, dozers, rollers, trenchers, pavers, backhoes or other heavy equipment . . . there are a variety of single or tandem axle Tilt-Tops with payload capacities from 3 to 15 tons. All are built for the "long haul"—with MILLER'S massive "EDG-SUPPORT" frames, Timken roller axle bearings and 2" oak deck platforms.

Best of all you pay no premium for quality. See these time saving production boosters at your MILLER distributor today—you'll be surprised at how ruggedly they're built—how little they cost!

MILLER Model "D" 4 ton Low Bed $695.* F.O.B. Milwaukee
Any optional equipment extra
*Plus Freight and 10% Federal Tax

See your MILLER distributor or write for FREE literature to:

✓ built best
✓ priced best

Miller Tilt-Top Trailer Inc.
457 S 92nd Street, Milwaukee 4, Wisc.

$$\frac{285\% + 200\%}{5}, \text{ or}$$

$$485\% \div 5 = 97\%$$

This is within our limits, 95 to 100%

3. Now, consider the 1-in. sieve. Take 3 parts of 12% passing and 2 parts of 97% passing, add them and divide by 5:

$$\frac{3 \times 12\% + 2 \times 97\%}{5}, \text{or}$$

$$\frac{36\% + 194\%}{5}, \text{ or}$$

$$230 \div 5 = 46\%$$

This is within our limits, 35 to 70%.

4. Next, consider the ½-in. sieve.

$$\frac{3 \times 4\% + 2 \times 38\%}{5}, \text{or}$$

$$\frac{12\% + 76\%}{5}, \text{ or}$$

$$88\% \div 5 = 17.6\%$$

This is within our limits, 10 to 30%

5. Then consider the No. 4 sieve.

$$\frac{3 \times 0\% + 2 \times 8\%}{5}, \text{ or}$$

$$\frac{0\% + 16\%}{5}, \text{ or}$$

$$16\% \div 5 = 3.2\%$$

This is within our limits, 0 to 5%.

Now, if we calculate a coarser blend, using 75% of the 2-in. minus to 25% of the 1-in. minus, we have a ratio of 3 to 1, and the percentages in our new blend become:

Passing 2½-in. - 100.0%
" 2 -in. - 96.25
" 1 -in. - 33.25
" ½-in. - 12.5
" No. 4 - 2.0

This blend still meets the specification limits. But it puts us pretty close to the low side and we run the risk of having the material rejected on the basis of subsequent tests. Consequently, the 3 to 2 ratio would appear to be the more satisfactory.

When three products are to be blended to make up a fourth product of specified gradation, the problem is a bit more complicated, but even here an inspection of the gradations of the three products to be blended can help us.

Such an example is given in TABLE II.

continued on page 223

Atlas Copco produce world's lightest motor drill

From Atlas Copco, the world's largest manufacturers of pneumatic rock-drilling equipment, comes an entirely new motor drill. It is the Atlas Copco *Cobra*, backed by 50 years' experience of rock-drilling equipment, and developed after extensive field tests.

Weighing a mere 53 pounds, the Atlas Copco *Cobra* is undoubtedly the lightest, handiest motor drill ever brought out. (The usual weight of a motor drill is around 80 pounds.) Yet despite its low weight the Cobra is able to put up a *higher footage* under actual working conditions than other, *heavier* motor drills. It is powerful, robustly constructed and, above all, *100 per cent self-contained!* One man can carry it and start it up *anywhere*.

New exclusive drill features

The Atlas Copco Cobra has 100 per cent air flushing from the built-in compressor. As no exhaust gases are used for flushing, troublesome decarbonizing is eliminated. Another *first-ever* feature is the free-wheeling mechanism for easier starting and more rapid steel changes. The Cobra also incorporates a unique new method of automatic rotation of the drill chuck, a floatless carburettor enabling drilling up to a 45 degree incline and a pull-type starter. The Cobra drills 100 feet to the gallon, has a drilling rate of 26 feet per hour, and can drill holes up to 13 feet in depth.

The right steels for the Cobra

The Cobra—like all Atlas Copco drills—has been developed for use with *Sandvik Coromant* steels, the world's most widely-used integral drill steels. This, of course, adds considerably to the performance of the Cobra. *No drill or steel developed separately could possibly give such equivalent high results.* Atlas Copco drills fitted with Sandvik Coromant steels have proved an unbeatable drilling unit, responsible for the drilling of no less than one billion feet each year.

World-wide sales and service

The Atlas Copco Group embraces Atlas Copco companies or agents manufacturing or selling and servicing Atlas Copco equipment in ninety countries throughout the world. For further details of the equipment featured here, contact any of the addresses shown below.

U.S. — Atlas Copco Pacific, Inc., 930 Brittan Avenue, San Carlos, California, Atlas Copco Eastern Inc., P.O. Box 2568, Paterson 25, N.J.

CANADA — Atlas Copco Canada Ltd., Montreal Airport, P.Q.

MEXICO — Atlas Copco Mexicana S.A., Apartado Postal 56, Torreon, Coahuila.

Motor Drill and Breaker in one!
The Cobra converts to breaker in minutes. Only three small parts to change. Reconversion just as quick.

Easily carried anywhere! *Perfectly-balanced carrying handle. Moulded back frame for transporting cross-country.*

Grinder driven from the Cobra! *A specially light drill steel grinder, powered through the crankshaft, can be supplied if required.*

DSS/61

Atlas Copco

Manufacturers of Stationary and Portable Compressors, Rock-Drilling Equipment, Loaders, Pneumatic Tools and Paint-Spraying Equipment

YOU GET "multiple-" from one basic

Giving regular "carry-type scraper" action in *Bullclam* position, this TD-9 Four-In-One grades on-the-go with inch-close accuracy—to reduce a builder's landscaping cost. As a Bullclam, the Four-In-One can grade, strip, or spread with precision, typical of its multiple use-range.

Carrying a big load of mill-waste to the pile, this TD-9 *Skid-Grapple* indicates its usefulness to a contractor—on such jobs as brush-stacking on land-clearing jobs, or low-cost handling of posts or poles. The exclusive top grab-arm under separate control lets you clamp on to the load securely.

This *Rock Fork* of super-strong alloy steel is built especially for handling the weight and to withstand the abrasion of loading rock. This TD-14 Rock Fork is digging up and loading rocks and boulders to rip-rap a big earth-fill dam near Jacksonville, Texas. Rock Fork works with the 3 larger Skid-Shovels.

It's simple to install this heavy-duty, ground-ripping scarifier attachment. The third valve, standard equipment on all International Drott Skid-Shovels, furnishes control power for scarifying. This high-lift scarifier has deep penetration, and strength to shatter hard materials.

-machine" usefulness

International Drott outfit!

You get the utility of four multiple-duty machines for one moderate investment in an exclusive International Drott Four-In-One. At a fingertip touch of the "machine-selector" lever, you instantly get your choice of four multiple-duty machine actions!

You get famous full-capacity *Skid-Shovel* excavating and loading performance. Or regular "carry-type scraper" action, in *Bullclam* position. Or as a *clamshell*, the Four-In-One gives you a load-gulping bucket—with hopper-high, bottom-dumping ability. And with clam-lip raised, you've got a responsive earth-rolling *bulldozer! You get versatility unlimited!*

And the identical International Drott *exclusives* that inspired Four-In-One design are also behind the development of an unmatched line of special-purpose attachments.

For example, exclusive concrete-smashing pry-over-shoe break-out action makes ideal boulder-bucking tree-grubbing power. Exclusive bucket-heaping ground-level roll-back is "just the ticket" for positioning Skid-Grapple loads of logs to semi-skid. And exclusive shock-swallowing Hydro-Spring constantly protects *all* International Drott equipment from impact!

With *Grubber Blade* attachment instead of Four-In-One, or regular bucket, this International Drott applies the tremendous force of pry-action break-out. And a tough old oak tree with 22-inch trunk is uprooted with record speed—in a Vermont land-clearing project!

Prove to yourself what amazing job-getting ability and money-saving capacity you command—with one of the four sizes of basic International Drott units—and whatever low-priced fast-switch attachments you need. Figure up the huge savings you make in machinery investment—and in hauling time and wages—getting multiple-machine usefulness. Ask your International Drott Distributor for a demonstration!

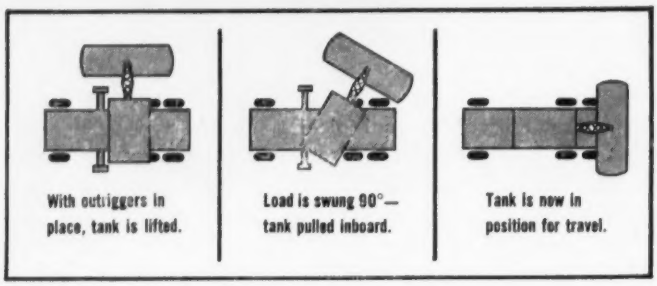
International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

Remove bucket and attach the *Bullangledozer*, and you have a real ditching, sloping, or shoulder-dressing outfit. Angle blade to either side or tilt as desired. On straight dozing, this versatile blade does heavy digging or fine grading under accurate hydraulic "radius control."

HOW 17 TON TANKS ARE LIFTED AND TRANSPORTED WITH A BAY CITY CRANEMOBILE

Because a BAY CITY CraneMobile can be used to transport as well as lift, it's a doubly-handy machine to have working for you. The photo and accompanying sketches show this husky performer, owned by Leach Steel Corp. of Rochester, N. Y., moving one of 60 bulky 17-ton steel tanks. The CraneMobile's extreme stability, power, and balance fit it for dozens of job applications . . . it is a busy contractor's most versatile, most profitable piece of equipment. Available in four sizes with a choice of seven mountings . . . crane capacities from 15 tons up. Call your dealer or write direct for illustrated catalog.



268

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

PRODUCING AGGREGATES...

continued from page 218

As we will likely need to calibrate gates to regulate the flow or feed of each of the three sizes, we should establish our proportion of each in terms of percent of the whole. It will help to visualize this if we consider the final product to consist of 100 tons. Then we will feed so much of each size to make up a total of 100 tons.

By inspection we note that approximately 1/3 of the percentage of the fines passing the No. 40 mesh sieve will give us a value falling about midway of the specification limits of 5 to 15. The same is true for the No. 200 mesh. In fact, one third of all the fine stone values fall within the limits.

This leaves two-thirds to divide between the intermediate and coarse stone. Because we want to give all the value we can to the coarse stone, we'll select it in a ratio of two or three to one. Hence, we can assume for purposes of first calculations these quantities to make up 100 tons.

Fine,	30 Tons
Intermediate,	20 "
Coarse,	50 "
Total,	100 Tons

In accordance with the above, we have the ratios 3 to 2 to 5. Hence our calculations are:

a. Obviously all the material will pass the 1½-in. sieve.

b. *Passing 1-in.*
All the fine and intermediate stone will pass the 1-in. sieve. Therefore;

$$\frac{3 \times 100 + 2 \times 100 + 5 \times 94}{10}$$

or

$$\frac{300 + 200 + 470}{10}, \text{ or}$$

$$970 \div 10 = 97\%$$

This is within our limits, 90 to 100%.

c. *Passing ½-in.*
Here we have;

$$\frac{3 \times 100 + 2 \times 96 + 5 \times 10}{10}$$

or

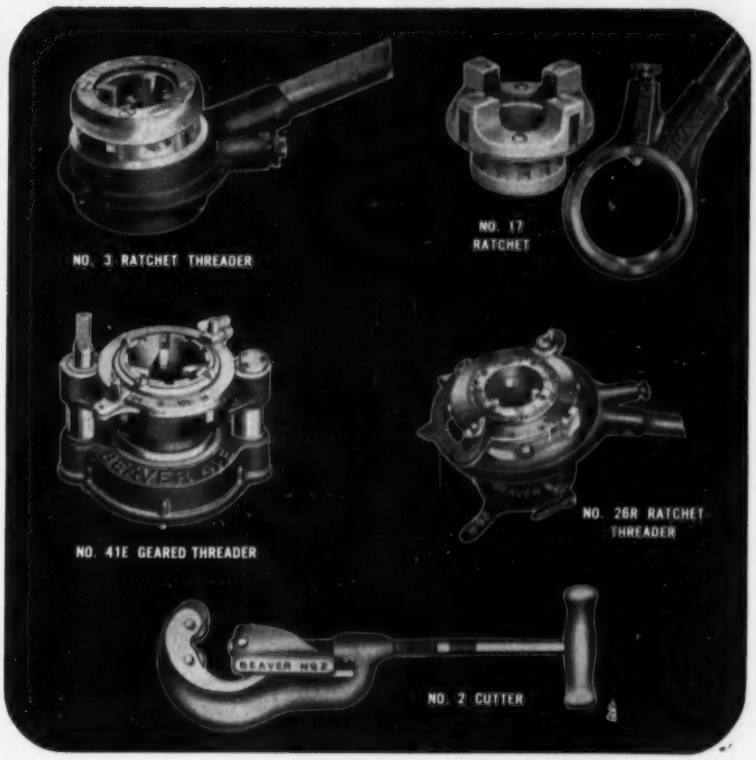
$$\frac{300 + 192 + 50}{10}, \text{ or}$$

$$542 \div 10 = 54.2\%$$

This is within our limits, 40 to 70%

d. *Passing No. 4*
Here we have;

continued on next page



Beaver Threaders and Cutters

MAKE PIPE THREADING EASIER

NO. 3 RATCHET THREADER . . . has enclosed ratchet teeth for greater safety. Threads 1/8" to 1" pipe; 1/4" to 1" bolts. Dirt and chips can't clog ratchet teeth to cause slipping. Dies easily removed to resharpen. Can be inverted for close threading. Convenient oil holes for easy oiling and chip clearance.

NO. 17 RATCHET . . . is a lightweight, rugged tool for hard use. Threads full range from 1/8" to 2". Ribs in bore of head assure perfect centering; accurate threads. Dies held securely by specially designed cap which eliminates top plate. Maximum chip clearance and oiling.

NO. 41E GEARED THREADER . . . is fully adjustable. Uses only one set of dies for full range 2-1/2" to 4". Threads both pipe and conduit with same dies by simple, quick adjustment. American or British thread; right hand only. Also special oil field threads. 10, 11-1/2 and 14 thread pitch; 3/8" or 3/4" taper.

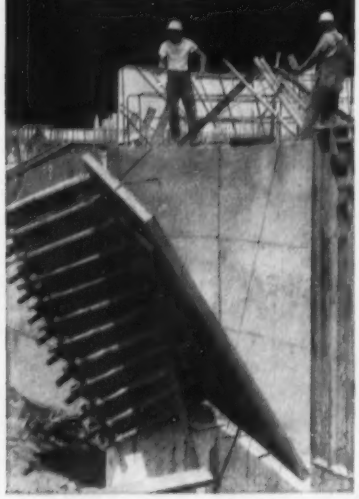
NO. 26R RATCHET THREADER . . . is the original self-contained threader. Threads 1" to 2" without changing dies or bushings. Threads pipe or conduit with same dies. The only threader that cuts standard, over- or undersize threads of uniform length. Large wing nuts make hand locking easy. Oil holes in head direct oil to dies. Ribs in bore of tool guide pipe into throat of dies for easy, accurate starting.

NO. 2 CUTTER . . . makes fast, easy cuts because pressure is applied directly to wheel. Cuts 1/8" to 2". Equipped with new Beaver Black Magic Cutter Wheels that cut both heavy and light work without changing. Lightweight —easy to use.

Can't tell it all here! Send for New Beaver Quick Reference Catalog! Get the latest facts on ALL new Beaver machines!

BEAVER PIPE TOOLS INC.
281-500 DANA AVE.
WARREN, OHIO

CUT COSTS up to 20%



FIR PLYWOOD concrete forms shave weeks off work schedules . . . cut form construction, erection and stripping time by as much as 20%. Can be used over and over. Every feature makes it ideal for faster construction. Fir Plywood is large, light, rigid, easy to work. Ideal for cost-cutting panelized form sections. Fir Plywood forms reduce finishing costs, too . . . form smooth, fin-free concrete surfaces.

specify DF-PA TESTED QUALITY

Fir Plywood

CONCRETE FORMS

FREE: New portfolio to help you design and use fir plywood forms. Contains complete specification, construction and design data. (Offer good USA Only)

DOUGLAS FIR PLYWOOD ASSOCIATION
Dept. 136, Tacoma 2, Wash.

Please send new Fir Plywood Concrete Form Portfolio

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

PRODUCING AGGREGATES ... continued

$$\frac{3 \times 96 + 2 \times 12 + 5 \times 4,}{10}$$

or

$$\frac{288 + 24 + 20,}{10} \text{ or}$$

$332 \div 10 = 33.2\%$

This is within our limits, 25 to 45%.

e. *Passing No. 10*
Here we have;

$$\frac{3 \times 72 + 2 \times 4 + 5 \times 0,}{10}$$

or

$$\frac{216 + 8 + 0,}{10} \text{ or}$$

$224 \div 10 = 22.4\%$

This is within our limits, 15 to 30%.

f. *Passing No. 40*
Here we have;

$$\frac{3 \times 32 + 2 \times 0 + 5 \times 0,}{10}$$

or

$96 \div 10 = 9.6\%$

This is within our limits, 5 to 15%

g. *Passing No. 200*
Here we have;

$$\frac{3 \times 12 + 2 \times 0 + 5 \times 10,}{10}$$

or

$36 \div 10 = 3.6\%$

This is within our limits, 2 to 6%.

On the basis of the above calculations we would feed the following percentages:

Coarse aggregate,	50%
Intermediate stone,	20%
Fines,	30%
Total	100%

Should the reader wish to use a graphic method for combining sizes of aggregate to meet a specification, he is referred to one presented by James M. Rice in the December, 1956 issue of The Crushed Stone Journal, National Crushed Stone Assn., 1415 Elliot Place, N.W., Washington 7, D.C.

The next article in the series on Producing Aggregates will discuss portable plants.

WHY BUY LESS

...the best costs so little

CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light...easy to handle because they are constructed of the strongest alloys of steel and aluminum. Equipped with famous CM-Alloy flexible, welded alloy steel load chain.

CM CYCLONE

- Capacities from ¼ to 10 ton.
- 1-ton model weighs only 36 pounds.
- 96% efficient—easy to operate.
- Lifetime lubricated.

CM PULLER

- Capacities ¾, 1½, 3 and 6 ton.
- ¾-ton model weighs only 13 lbs.
- Lifts or pulls at any angle.
- Lifetime lubricated.

Write for catalog and name of your nearest CM dealer.

CM

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.

2 BLAW-KNOX BITUMINOUS PAVERS
do work of three ordinary pavers

16-Foot Paving Width—High Travel Speed Make Massachusetts Paving Go Faster

A wide 16-foot paving width combined with the mobility for making fast restarts allowed Massachusetts Turnpike Contractors to use two Blaw-Knox Model PF-90 Bituminous Paver Finishers where three of any other make would be required.

One of the Blaw-Knox Model PF-90 Bituminous Paver Finishers was set to pave a 16-foot paving width including a 4-foot shoulder with a 4% grade. A second Model PF-90 followed at a 150-foot interval paving a 12-foot strip. Every 500 to 600 feet one of the pavers was quickly re-rigged and returned to lay the final 10-foot paving strip to assure a hot joint between all three strips.

The combined advantages of larger hopper, wheel mounting and a wide paving width make the PF-90 the finest bituminous paver for all big production jobs. These features added to the high travel speed make the Blaw-Knox Model PF-90 the leader in its field.

For complete information on the Blaw-Knox Model PF-90 Bituminous Paver Finisher see your local Blaw-Knox Distributor or write Blaw-Knox Company for Bulletin 2475.

Model PF-45
Ideal for Small Paving Jobs

If you have smaller black top paving jobs the Blaw-Knox Model PF-45 Black Top Paver gives you the same economy advantages of rubber-tired mounting which you get with the PF-90.

BLAW-KNOX

BLAW-KNOX COMPANY
Construction Equipment Division
38 Charleston Ave., Mattoon, Illinois

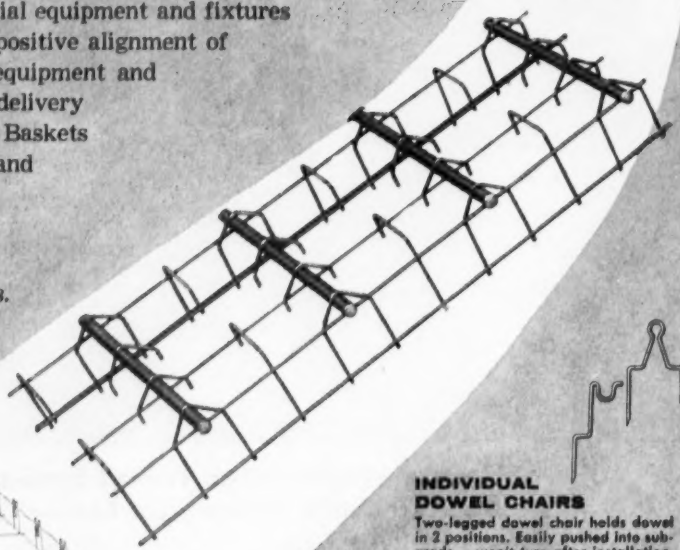
UNIVERSAL PRODUCTS
for highway construction

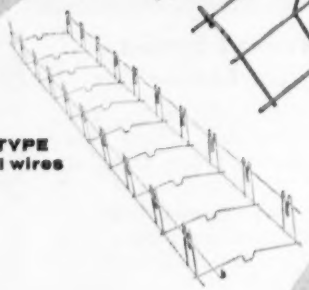
DOWEL BASKET ASSEMBLIES

Universal Dowel Basket Assemblies are designed and fabricated to specifications. Special equipment and fixtures guarantee accurate spacing and positive alignment of dowels. High speed production equipment and modern facilities insure prompt delivery of your requirements. Universal Baskets are approved by Federal, State and private authorities for highway and airport construction.

Let us quote on your requirements. Write for complete details today.

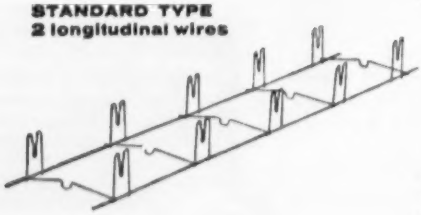
HEAVY DUTY TYPE
Maximum strength and support





STANDARD TYPE
4 longitudinal wires

STANDARD TYPE
2 longitudinal wires



INDIVIDUAL DOWEL CHAIRS

Two-legged dowel chair holds dowel in 2 positions. Easily pushed into sub-grade — won't turn after installation. Wide range of heights.

Single Leg Dowel Chair permits quick snap-in of Dowel. Sizes to support Dowel from 3" to 6" above sub-grade.

STAKE PINS

Keep Dowel Bar Assemblies in place during the pour. Lengths from 4" to 15" in ¼" increments.

DOWEL SLEEVES

Metal Dowel Sleeves for covering ¾" Dowel Bars; overall length covers 2½" or 3" Dowel. Special sizes and lengths available.

HOOK BOLT ASSEMBLY

For providing required tieing element along longitudinal joint. Eliminates necessity of bending tie bars or drilling road forms.

R 1301

UNIVERSAL FORM CLAMP CO.

GENERAL OFFICES AND FACTORY: 1238 N. KOSTNER • CHICAGO 51, ILLINOIS

OFFICES AND WAREHOUSES:

CLEVELAND, OHIO, 24901 Lakeland Blvd.
HOUSTON, TEXAS, 2314 Preston Ave.
LOS ANGELES, CALIF., 13210 So. Figueroa Ave.
BALTIMORE, MD., 1020 N. Kresson St.
SAN LEANDRO, CALIF., 2051-9 Williams St.
ATLANTA, GA., 1401 Howell Mill Rd.

DISTRIBUTORS IN PRINCIPAL CITIES

Service Wherever You Build . . . Coast to Coast

A Progress Report on Faculty Salaries:

UP . . . But Not Nearly Enough

THE CHART on this page provides a report of the progress being made in solving a problem of crucial importance to every American. The problem is that of seeing that college and university faculty members get decent salaries.

This new chapter, which brings the story forward two years—from 1954, when it was last dealt with in this series of editorials, through 1956—has a decidedly cheering element. For in the last two years faculty salaries have made real headway.

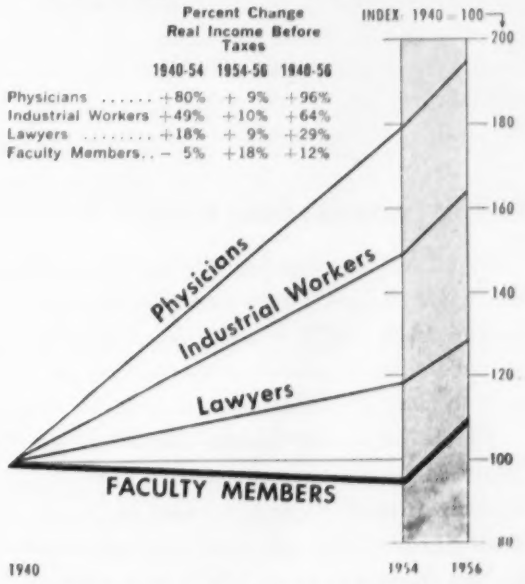
Two Years of Improvement

In 1954, in terms of what their salaries would buy, faculty members as a whole were actually worse off, by 5%, than they had been fourteen years earlier. As the chart shows, over the same period the real income of the average industrial worker had increased by almost half. And, in what it would buy, the income of the average physician, with professional training comparable to that of the average faculty member, had jumped by 80%.

In 1956, however, the average faculty salary would buy about 12% more of goods and services than it would in 1940. Relative to where they were two years before, faculty salaries showed a larger gain over the two years than those of any of the other groups whose salary progress is charted.

This movement of faculty salaries in the right direction has many contributing causes. The biggest single boost was given by the great Ford Foundation gift of half a billion dollars to our colleges, universities, and hospitals, almost half of which was ear-marked for faculty salary increases. Gifts from business firms have also

What is Happening to College Faculty Salaries



DATA: Council for Financial Aid to Education, U. S. Dept. of Commerce, U. S. Dept. of Labor, National Association of Education Research Dept., McGraw-Hill Dept. of Economics.

helped a lot. And so, in many cases, have stepped-up money-raising campaigns by alumni groups and cooperative regional and state groups of colleges.

Still a Long Way to Go

However, faculty salaries started their ascent from such a dismal depth that they still have a long, long way to go up before there is room for the comfortable conviction that they are fair, or even safe, from the standpoint of protecting the nation's vital interests. It still remains possible to find many shocking companion pieces for the following incident recently reported to a McGraw-Hill executive group, working on problems of financial aid to higher education, by the president of an illustrious small liberal arts college.

"The recruiting officer of one of our large industrial companies came to our campus a few weeks ago," the college president said, "and offered five of our seniors higher salaries to start working for that company when they are graduated next June than the salary received by any member of our faculty. And the seniors, of course, promptly went to their professors to seek advice on whether or not they should accept. It doesn't take much imagination to see what this sort of thing does to the morale of a faculty."

Senior Teachers Fare Badly

One of the more devastating things it does, of course, is to make the more experienced college and university faculty members receptive to the idea of going to greener pastures, currency-wise, in business and industry.

For these senior faculty members the financial pounding in the past 16 years has been even worse than the chart indicates. While the average real salary gain reported by the chart has been 12%, the average salary of a full professor still buys less than it did in 1940. This is because most of the salary increases have gone to beginning instructors, for whose services industry has been providing the sort of competition reported by the liberal arts college president.

And it creates this financial lackluster of posts as senior college faculty members right at the time their services are needed more than ever to handle the oncoming flood of college and university students. Between now and 1970 college and university enrollment is expected to double.

What is Needed Now

What is clearly needed is a continuation and intensification of the drive to increase their salaries to a point where college and university faculty members will be sharing somewhere near fully in the general prosperity of the nation. It could be counted good progress in this direction if over the next two years faculty salaries on the average were to go up another 12%, with most of the increase concentrated in the senior faculty ranks. And this can be made possible only through more outside contributions.

There is reason to be encouraged by the progress that has been made over the past two years in bailing college and university faculty members out of the terrible financial hole into which they were allowed to slide. But there is the most urgent occasion to keep at it and harder.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

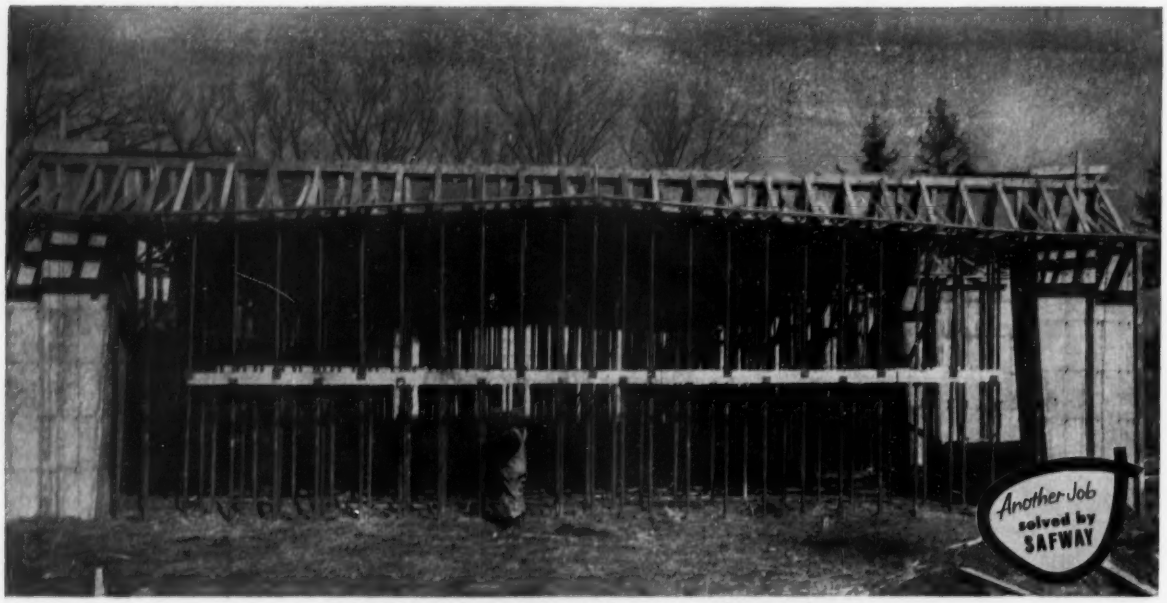
SINCLAIR PRODUCTS TO BE USED ON FIRST JOB AWARDED UNDER FEDERAL AID HIGHWAY PROGRAM

The first interstate system contract award made in the entire United States under the 1956 Federal Aid Highway Program has gone to the Koss Construction Company at Des Moines, Iowa. They use Sinclair Fuels and Lubricants exclusively. This important "first" involves 13.28 miles of 24-foot concrete pavement in Laclede County, Missouri.

Koss Construction uses assembly line techniques geared to tight production schedules. To help maintain these schedules they have used Sinclair lubricants for over fifteen years.

It's smart management to switch to the lubricants that can help keep your bid low by keeping your equipment constantly on the job. Phone your local Sinclair Representative or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR LUBRICANTS



80,000-lb. Beam Supported at 14-15 ft. Heights

Pour Time Cut 20% with Safway Shores

Make Jobs Easy to Figure!

Safway shores made this job easy to figure. After calculating the live and dead load and the strength of his ledgers, the job superintendent worked out the number of shores needed from the simple table below. And if you want help of any kind, your local Safway man is always ready to work with you!

SHORE HEIGHT (ft.)	SAFE LOAD CAPACITIES *including a safety factor of 3:1*		
	Models S-18 and S-114 (lbs.)	Models S-28 and S-214 (lbs.)	Models S-38 and S-314 (lbs.)
6	9910	...	...
7	9910	...	...
8	9000	9000	...
9	6200	6200	...
10	5250	5250	...
11	4550	4550	4550
12	...	3200	3800
13	...	2900	3100
14	...	...	2000
15	...	...	1500

Models S-18, S-28 and S-38 have 8-in. U-head. Models S-114, S-214 and S-314 have 14-in. U-head.

USED FASTER AND EASIER THAN WOOD SHORES AND JACKS; SET-UP AND STRIPPING TIME MINIMIZED

CUTTING COSTS can make the difference between job profit and loss, says Contractor S. M. Byrne of Milwaukee, Wis. And on his St. Theresa's Church job (*shown above*), Safway telescoping steel shores helped him assure a profit by reducing overall concrete pour time by 20%.

The 50-ft. long beam is 32 in. wide, with a depth ranging from 2 ft. at the center to 3 ft. at each end. Its 80,000 lb. weight is distributed at an average of 1,500 lbs. per shore—well within the capacity of Safway shores at the 14 to 15 ft. extensions required. Shores are spaced on 2 ft. centers and have only one horizontal wood brace.

"Our men like Safway's easy handling and quick height adjustment," asserts Mr. Byrne. "Erection and stripping time are minimized, and bracing is almost eliminated. We now own 200 Safway shores, and work 20% faster than when we used wood 4 x 4 shores and jacks."

SAFWAY SERVICE CAN HELP YOU

Safway's broad experience and Safway equipment can help you on every shoring problem. The Safway dealer in your area offers planning and erection service—with ample stocks for *sale* or *rental.* Get Safway recommendations on your next job.

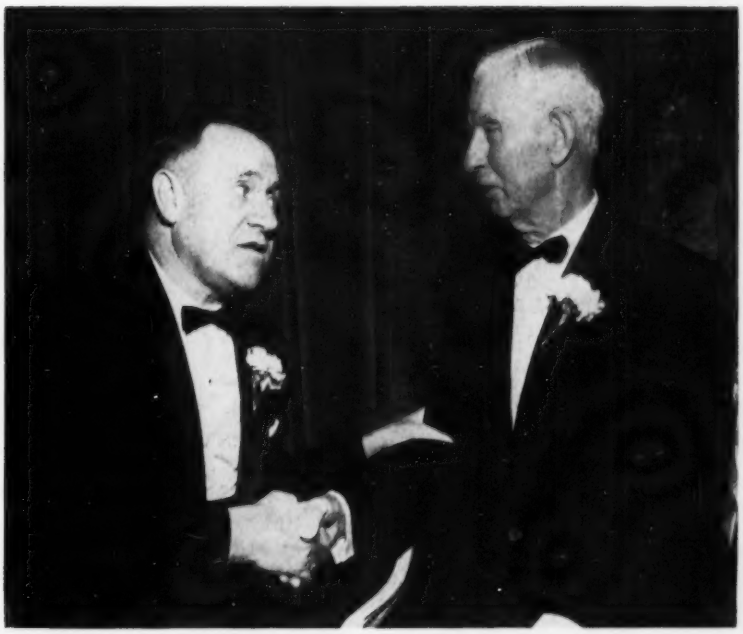
Write **FOR FREE BULLETIN**

Learn all about Safway telescoping steel shores and the many advantages they offer you. Write today for your copy of **BULLETIN 23.**

Look for your local Safway office in the yellow pages of your phone book under: "Scaffolding." Safway has 135 warehouses to serve you.

SAFWAY
STEEL PRODUCTS, INC.
6243 W. State St., Milwaukee 13, Wis.

Construction Men in the News...



Perini, Atkinson Get Mole Awards

LOUIS R. PERINI (left), president, The Perini Corp. of Framingham, Mass., and **GUY F. ATKINSON**, chairman of the board, The Guy F. Atkinson Co. of South San Francisco, Calif., are recipients of the 1957 Moles awards (CM&E, Dec., 1956, p.118). Awards were made at a dinner in New York attended by 1,100 heavy construction men.

The Moles, an organization of leaders in the heavy construction industry, makes awards annually for outstanding achievements in world-wide heavy construction.

Bronze plaques which went to each awardee lauded them for "outstanding achievements in construction."

Each also received an engraved scroll. Perini's read: "For his skill, enterprise, and daring on many monumental construction jobs and his many humanitarian works." Atkinson's said he was a man "who for more than three-score years has participated in many of our country's most important projects."

JAMES P. NEILL of Western Constructors is the new president of the Pipe Line Contractors Association. He was elected to the post at the association's ninth annual convention in Boca Raton, Florida.

Other new officers are R. P. GREGORY of Houston Contracting Co., first vice president; M. S. WILLIAMS of Panama-Williams Co., second vice president; and ROBERT D. SHEEHAN of Sheehan Pipeline Construction Co., treas.

HARD S. STICKEL is new executive vice president, and **WILLIAM L. WARDLE, JR.**, is vice president in charge of operations, of Crump, Inc., Pittsburgh engineers and contractors.

Stickel will work in all phases of the company's operations including administration, engineering, construction, and contracts. He has been for the past nine years contact sales manager with the Limbach Co., Pittsburgh.

Wardle has been chief engineer with Crump since 1953. He will continue in that capacity, directing all engineering and estimating activities as well as coordinating construction projects.

DWIGHT A. DOUGHERTY takes over as general manager of SD Plants, Inc., construction subsidiary of Scientific Design Co., New York. Dougherty has been for 25 years with the construction department of M. W. Kellogg Co. as assistant director of construction and manager of the company's Canadian and Latin American operations.

CLARENCE E. KILLEBREW is the new president of the Construction Industry Manufacturers Association. His election came at the organization's annual meeting in Chicago. Killebrew is vice president, Clark Equipment Co.

continued on page 234

Versatile Work Bulls

pay off

on every project !

Work Bulls provide the *right* tractor power with design-integrated attachments to build profit on these and scores of other jobs!

42 hp — DAVIS PIT BULL

(far left) **is equipped with hydraulically controlled ⅞-yd. loader. Broom, blades, swinging crane or fork lift can be mounted on same loader frame and arms. The Pit Bull features a torque converter and combination food feed and reversing clutches as standard equipment.**

34 hp — WORK BULL MODEL 202

(center) **with rear-mounted post hole digger that digs perpendicular holes even when working on slopes. PTO driven, the attachment can be used with either 8 or 12" augers. Other rear-mounted attachments include the Model 185 backhoe, reel and rotary mowers, multi-purpose blade and a pipe and cable layer. Front-mounted attachments include loader, blades, broom and fork lift.**

52 hp — WORK BULL MODEL 404

(left foreground) **is biggest, most powerful tractor in line. Available with gasoline or diesel engines it has five forward speeds and optional power steering. Model illustrated is equipped with low, direct-thrust ¾-yd. loader and a fingertip-operated hydraulic backhoe which handles 12 to 36-in. buckets, digs to depth of 12½ feet.**

. . . as primary equipment

Work Bulls give both large and small contractors, municipalities and general industry a great new opportunity to put former hand labor, or work too small for their present equipment, on a paying power basis. With five tractors (34 to 52 hp) — each with a score of *switch-in-a-smoke-break* attachments — Work Bulls are truly a dozen machines in one. They pay off on small, scattered work-and-run assignments. And they'll earn their keep off-season, too. You can use them or lease them out for snow removal, or scores of money-making jobs.

. . . as backup machines

Ever worked a job too big for one machine but too small to be profitable with two? That's another type of assignment where Work Bulls pay off. Team Work Bulls with bigger, more expensive, single-purpose rigs. You get the exact power-equipment cost ratio the job demands. And you increase equipment scheduling efficiency. What's more, Work Bulls travel anywhere without expensive trailers or special travel permits. Thus, it's highly practical to shoot them from site to site as your production picture changes.

. . . as utility or cleanup tools

When you're using shovels to clean up spill in the loading area, scrapers to smooth out haulroads, crawler dozers to haul wagons or skid light and medium-weight machinery — there's a profitable place for Work Bulls on your job. Low in initial price, hourly cost and upkeep—Work Bulls provide a perfect means of making cleanup and utility jobs pay. With Work Bulls on the job, your mainline equipment can concentrate on the type of work it's designed for. Work Bulls supplement "big stuff"... easily, inexpensively.

Write today for 24-page catalog and name of your distributor

M·H·F *WORK BULLS*

Division of Massey-Harris-Ferguson, Inc.

12-2 Quality Avenue **Dept. 20-C** **Racine, Wisconsin**

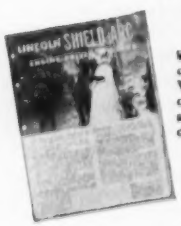
Lincoln engine welders have STAMINA

9 out of 10 contractors say Lincoln Shield-Arc's can take it . . . and dish it out

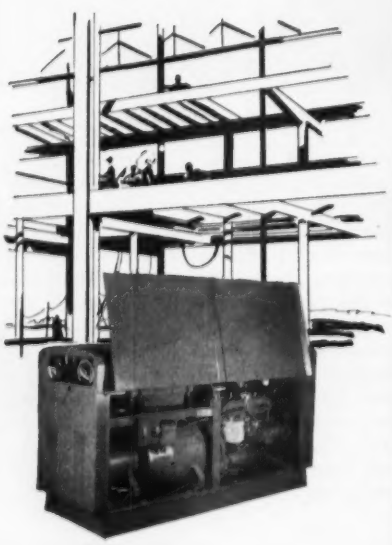
- **SLOW SPEED ENGINES for long life**
- **Heavy-duty, rugged design**
- **Extra overload capacity**
- **Close speed regulation and current control**

Gasoline engine driven models in 200, 300, 400, and 600 amp sizes.

Diesel engine driven models in 250, 300, and 400 amp sizes.



WRITE FOR SPECIFICATIONS on Lincoln Shield-Arc Welders. Bulletin SB-1356 on diesel driven welders and SB-1357 on gasoline driven models.



THE **LINCOLN ELECTRIC** COMPANY

Dept. 2713 • Cleveland 17, Ohio

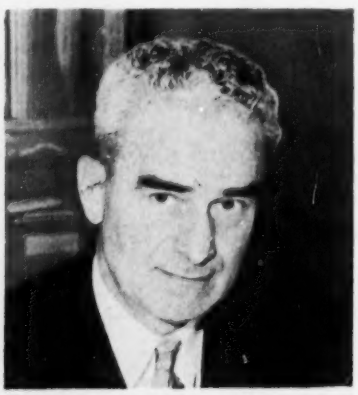
The World's Largest Manufacturer of Arc Welding Equipment

MEN IN THE NEWS . . . Continued

GUY V. SPERRY (far left) chief engineer of Utah Construction Co., San Francisco, has been elected a vice president. **JOHN M. HORRIGAN** (left) is new secretary of the firm.

Sperry has been in charge of heavy construction projects for the company since 1952. He joined Utah in 1942. Prior to that, he served with the U.S. Bureau of Reclamation, participating in many major projects including Hoover Dam and California's Central Valley Project.

Horrgan has been controller and assistant treasurer since 1945. He joined the company in 1921.



JULIEN R. STEELMAN, president of the Koehring Co., Milwaukee, is the new president of the American Road Builders' Association. He succeeds John N. Robertson in the post. Steelman, who at one time was president of the Construction Industry Manufacturer's Association, was elected during the NRBA's convention in Chicago.

J. DUNCAN WEBB, former treasurer of Union Building and Construction Corp., becomes president of Central Florida Construction Co., wholly owned subsidiary of Union. Offices are in Miami.

Webb remains as a director and vice president of Union. Succeeding him as treasurer is JAMES A. SLATER, former assistant treasurer. Before joining Union in 1955, Webb was treasurer-comptroller of the eastern operations of Peter Kiewit Sons' Construction, Inc.

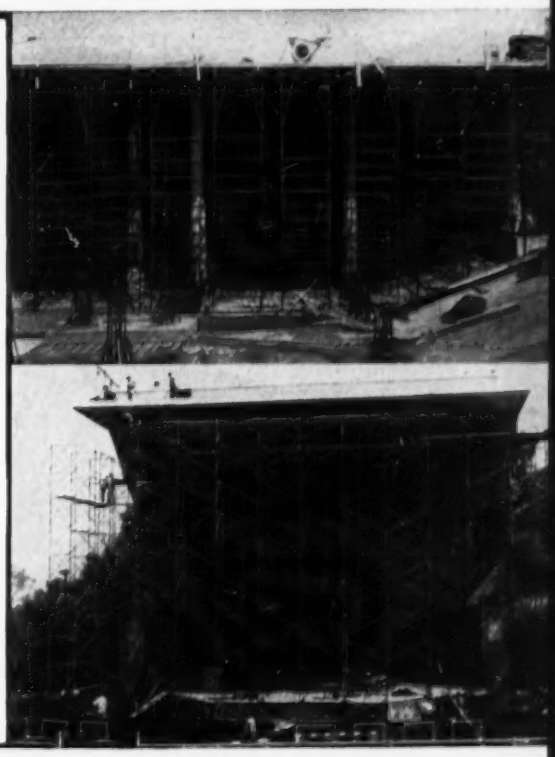
L. MINER DOOLEN is the new president of the Associated Equipment Distributors. He was elected at the association's 38th annual meeting in Chicago. Doolen is president of Telford Equipment Company, Lansing, Mich.

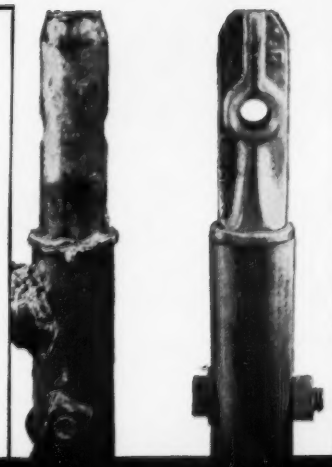
SKIN PROTECTION

is a vital problem in scaffolding too!

You are definitely costing yourself profits if you are still using slower-erecting rusted scaffolding

A skin scratch may heal easily . . . but on a scaffold's painted surface, a scratch or dent opens the way for rust, corrosion, and pitting. And this pitting costs you profits by slowing down scaffold erection. With continued rusting, pitted scaffolding gets harder and harder to work with. Once you realize how rusted scaffolding causes higher erecting-labor costs, you'll demand a galvanized scaffolding . . . Universal Ezebilt. It is the only scaffold Dichromate Galvanized, *at no extra cost,* to eliminate rust. It will always assemble faster, look better on the job, last longer.





BIG CONTRAST in Dichromate Galvanized scaffold vs. painted scaffold shown at left after 14 months' normal use. The rust pits at joints are bound to cause sticking and prevent easy assembly, but the Galvanized section (on right) remains rust free. The Dichromate provides a long-lasting lubricative protective coating. This non-rusting, faster-assembly feature, together with Ezebilt's famous Gravity-Lock "no loose parts," makes Universal the finest, most economical scaffold available. Check yellow pages for local distributor.

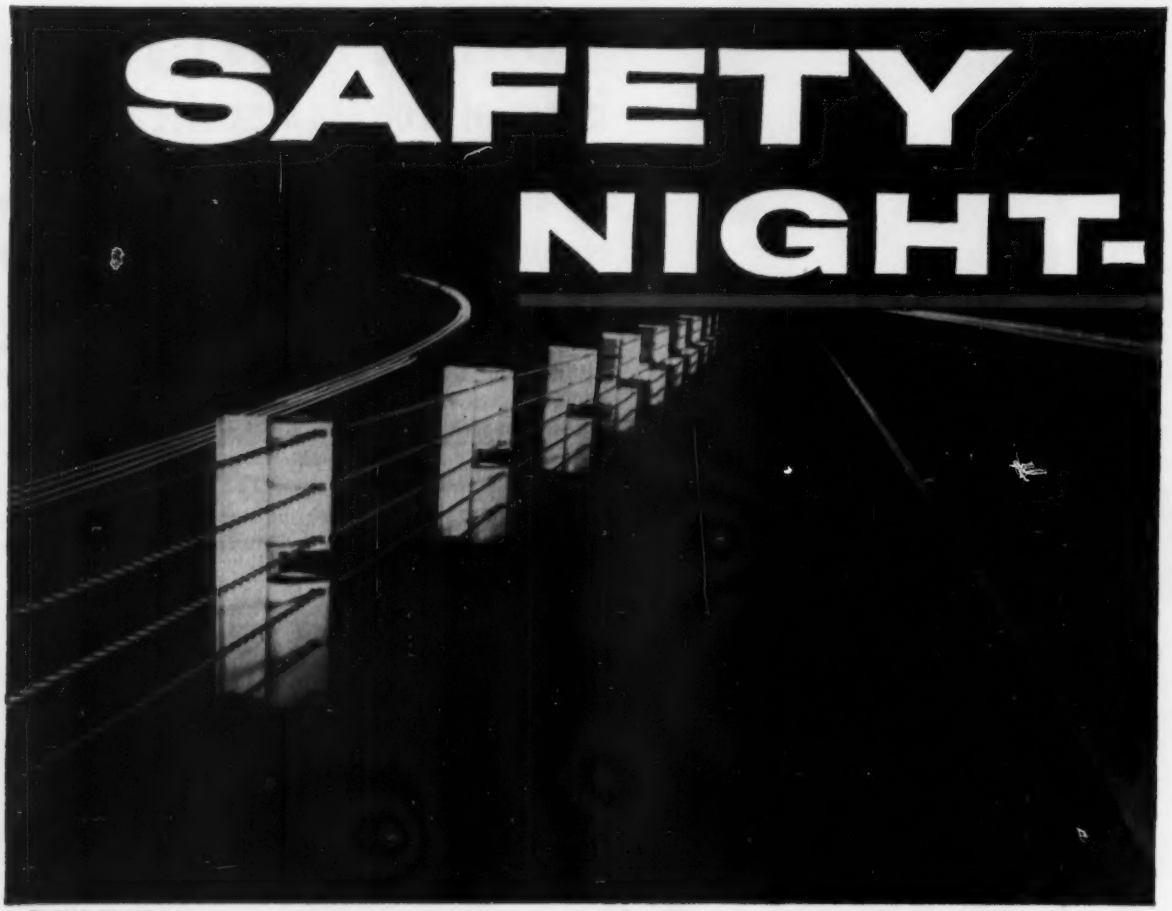
Write for Free Catalog

UNIVERSAL

the only **GALVANIZED SCAFFOLD**

UNIVERSAL MANUFACTURING CORP. ZELIENOPLE 6, PA.

World's largest producer of galvanized steel panel scaffolding.
Sales and rental stocks from distributors everywhere.



ALONG THE ROAD. Day and night, Multisafty Cable Guard stands guardian of America's newest highways, giving two-fold protection from serious accidents. It restrains vehicles from plummeting off the berm. In addition, its resilient combination of strong, steel cables and spring-steel offset brackets cushions the shock of any collision . . . helps prevent damage to the vehicle and injury to passengers.

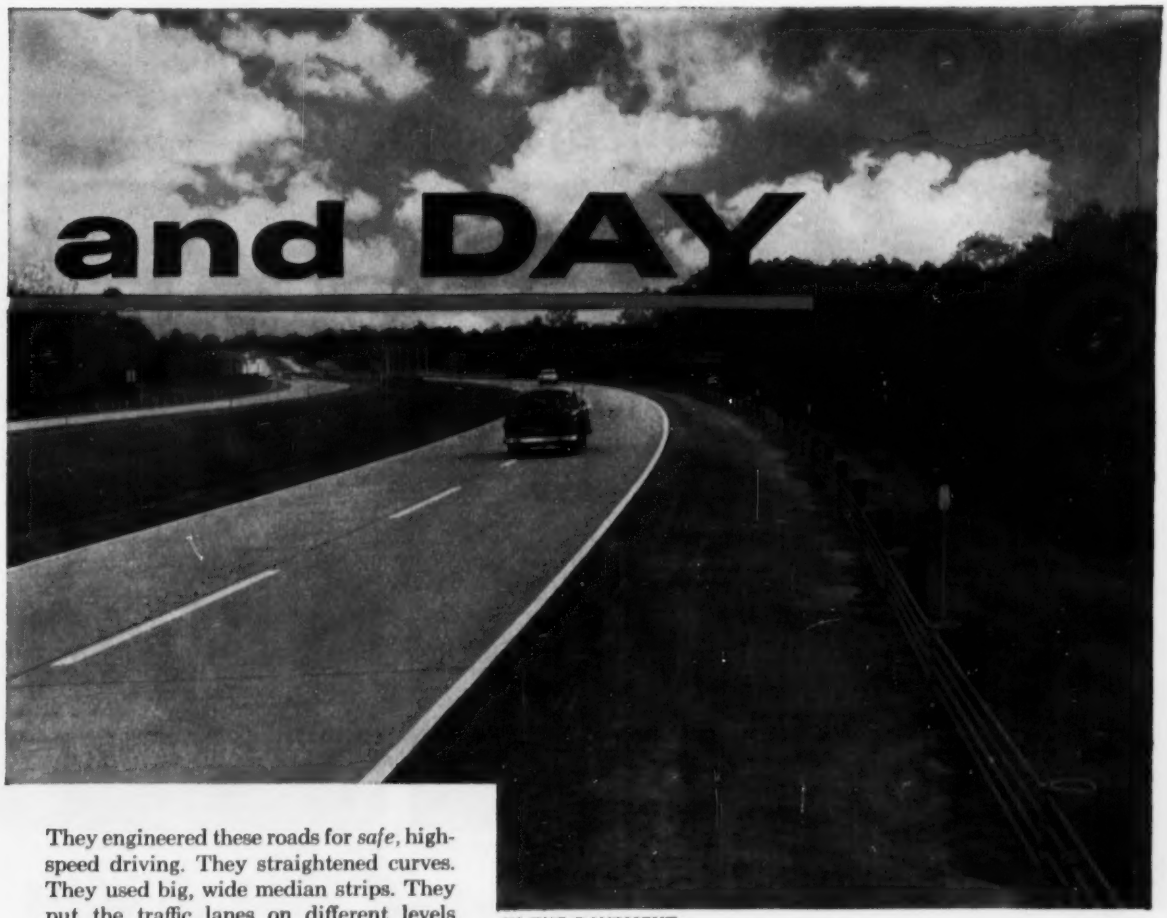
ECONOMY IN CULVERTS.

American Welded Wire Fabric brings the same service-lengthening benefits to culverts as to pavements. Concrete, reinforced with Welded Wire Fabric, is the economical way to build culverts because this combination of materials resists abrasion, has the strength to withstand high stresses, and is easily installed.

SEE The United States Steel Hour. *It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.*

USS Multisafty Highway Guard

USS



They engineered these roads for *safe*, high-speed driving. They straightened curves. They used big, wide median strips. They put the traffic lanes on different levels where possible. Then, they used construction materials manufactured by American Steel & Wire to enhance the basic safety designed into the road.

Materials such as Multisafty Highway Cable Guard which protects the sides of the road. American Welded Wire Fabric which lengthens the life of the pavement . . . keeps it smooth, easy-riding, and safe. And American Road Joints which smooth the transition from slab to slab.

These are essential materials for any truly modern highway. Use them in your roads . . . in your city streets.

AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.,
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

IN THE PAVEMENT. A smooth pavement is a *safer* pavement, and American Welded Wire Fabric and American Road Joints help assure years of smooth, safe riding on great highways such as the Ohio Turnpike, the Pennsylvania Turnpike, the Indiana Toll Road, and others.

American Steel Wire
Room 4B-37, Rockefeller Bldg.
Cleveland 13, Ohio

Please send complete information on the following products

- ☐ American Welded Wire Fabric for Portland Cement Concrete
- ☐ American Welded Wire Fabric for Asphaltic Concrete
- ☐ American Welded Wire Fabric for Airport Runways
- ☐ American Road Joints
- ☐ Multisafty Highway Cable Guard
- ☐ American Beam-type Highway Guard
- ☐ American Wire and Strand for Prestressed Concrete
- ☐ Road Manual

Name .....

Firm .....

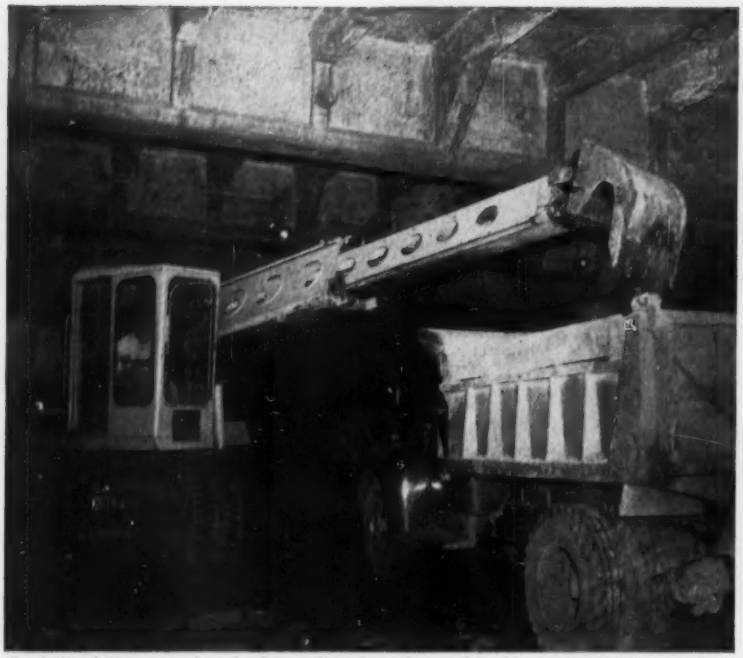
Address .....

City ..... State .....

USS American Welded Wire Fabric

UNITED STATES STEEL

How Gradalls built a $2,000,000 business for Arnolt Brothers, Inc.



Gradall's ability to work under low ceilings is made use of in this ripping of Belgium Block paving from an approach to New York's Holland Tunnel.

Gradall economically spreads an even 3-inch layer of slag on an oil refinery's storage tank fire wall.

Gradall digs for a pipe run in one of the country's largest refineries. Its telescoping boom enables the operator to easily reach in under pipe bent.

"Our diversified contracts require equipment that can handle many different types of work. Multi-purpose Gradalls perform well on any project—and pay for themselves in 18 months or less", reports President Fred Arnolt, Jr.

Four years ago, when the principals of this small but progressive dirt-moving organization decided to diversify their activities in order to prosper and grow, equipment selection became an important item.

A magazine advertisement for the multi-purpose Gradall gave them the idea of building their equipment fleet around one machine. As Vice President Marty Jessen tells the story, "The ad claimed that this machine would do 'a dozen' jobs. That was right up our alley. We took the gamble and it has paid off for us—time and time again."

In addition to its contracting business, Arnolt also rents equipment to other contractors. Most of these rentals have been from their fleet of 10 Gradalls. That's because users everywhere know of the machine's extreme versatility and ability to handle such a wide variety of work.

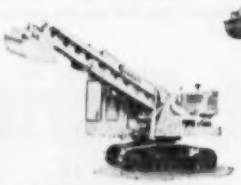
This year Arnolt's business in both the building and utility fields will total over $2,000,000—and prospects look even better for 1957. Secret of their substantial growth can be attributed to the use of multi-purpose, mobile equipment—like the Gradall.

Gradalls do all these jobs for Arnolt Brothers, Inc.

- Highway subgrade excavation
- Ditch cleaning
- Pipe placing
- Trench excavation
- Materials handling
- Pavement removal
- Frost breaking, for pipeline or trench
- Fine grading and slope dressing
- Backfilling
- Fire-bank construction
- Crane work and other lifting
- Pipe stringing
- Ditching
- Sheetpile driving

® Reg. U. S. Pat. Off

ALSO AVAILABLE



CRAWLER-MOUNTED GRADALL

SELF-PROPELLED GRADALL

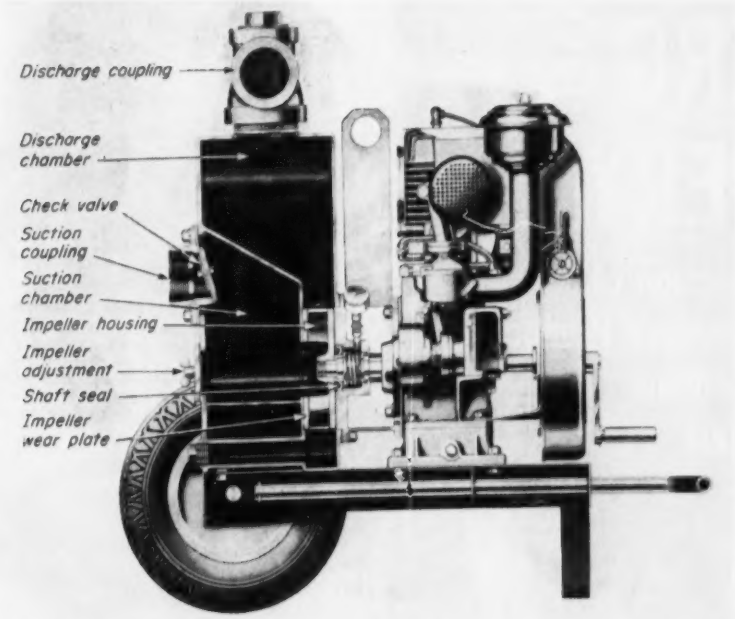
RAILROAD GRADALL

Gradall

DIVISION OF WARNER & SWASEY Cleveland PRECISION MACHINERY SINCE 1880

Distributors in over 75 principal cities in the United States and Canada

YOU CAN DO IT BETTER, FASTER, FOR LESS WITH A GRADALL



CENTRIFUGAL PUMPS normally are easy to service, but some failures, such as those caused by air leaks in lines or at couplings or seals, are difficult to diagnose.

How to Spot Pump Trouble

THE CENTRIFUGAL PUMP, one of the simplest and most efficient of all machines, is popular with contractors because of its portability, its versatility, and its high delivery rate. It is simply designed, it has few moving parts, and it is relatively easy to operate and maintain.

When trouble does arise, however, its cause is often a mystery to the operator—especially to the operator who has faithfully followed the manufacturer's servicing recommendations.

Normal servicing will go a long way toward keeping a self-priming centrifugal pump in good working order. But the pump has one characteristic that makes it vulnerable to apparently unexplainable shutdowns: unlike the diaphragm pump, it is not designed to handle air with the liquid it transports. A large air leak will prevent priming, and even a small leak will drastically reduce the capacity of the pump.

As a result, particular attention must be given to hose lines and couplings and to shaft seals or stuffing box packings. These components must keep back air that attempts to enter the pump body, and when one of them is faulty, the capacity of the pump suffers.

Air is especially troublesome when the pump suction lift approaches 25 ft, when the pump is operating some distance above sea level, and when the pump is handling warm water. Under these conditions, even small amounts of air will prevent the impeller from creating enough vacuum to pull up water.

Leaks at the suction line or at line couplings are the most common entry points for air. Even small pin-holes in the suction line are enough to kill off most of the pump's capacity. If couplings are used to connect pieces of suction line, make sure that a supply of hose washers or gaskets accompanies the pump into the field.

If pump capacity is below normal, although the pump appears to be producing a high vacuum, chances are that the rubber lining in the hose has pulled loose from the fabric and is clogging the line. This may be the trouble even if the hose is new because the initial vacuum created by the pump may be strong enough to pull away the lining.

There are several types of shaft seals, but they all do the same job —they prevent air from leaking in and water from leaking out at the point where the shaft enters the pump housing. Generally two rings are used, one sealed to the shaft and the other sealed to the pump housing. When the engine is started these rings press against each other as the seal on the shaft rotates and the one on the housing remains stationary.

Because the seals maintain running contact that produces heat and friction, they wear out and must be replaced periodically. Faulty seals either will prevent the pump from priming properly or they will affect water delivery.

There are two types of rings, those that require grease or oil lubrication and those that are designed to use the liquid being transported by the pump as a lubricant. In either case, seals will last much longer when lubricated properly according to the manufacturer's recommendations.

When a stuffing box is used instead of shaft seals, the packing becomes a critical item. Although several replacement brands are on the market, the best ones are those that are very soft and pliable. Never use metallic packing on pumps that must handle grit or other abrasives. A long-fiber, tallowed flax packing is satsifactory for general cold water use, and asbestos packing can handle water of any temperature.

When a new packing is installed, a certain amount of leakage is to be expected (it lubricates the packing). When this leakage is excessive and can't be reduced by drawing down on the stuffing box gland, add another rim of packing. If leakage still persists, chances are that the box has been packed improperly, and the only thing to do is to remove the packing and install a complete new set of rings.

If they are available, cut-to-length rims make the job easy. If coil packing is used, make sure that the rims are cut with square ends so that the joints can be flushed. When inserting the rings

continued on page 242

NORDBERG MACHINERY

. . . for volume production of Aggregate . . . Bituminous Products . . . Sand . . . and Cement to meet the most rigid specifications

for both Stationary and Portable Plant Service

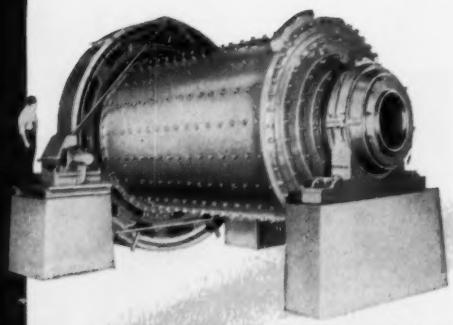
Here is the Nordberg Machinery you need to produce maximum tonnages of specification aggregate, bituminous materials, sand and cement at lowest possible cost.

This dependable line of machinery has established a solid reputation throughout the world and is used by leading producers and contractors of highways, dams and hydro projects, bridges, as well as commercial and residential buildings.

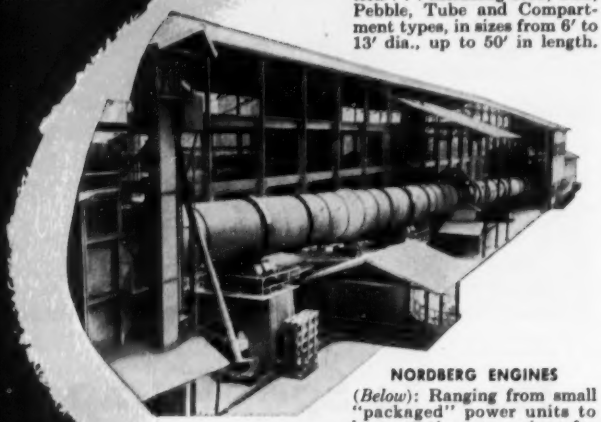
Whether you are a contractor, operator, construction superintendent or design engineer, it will pay you to specify and use Nordberg Crushing, Screening and Grinding Machinery.

Write for literature on the machinery you need.

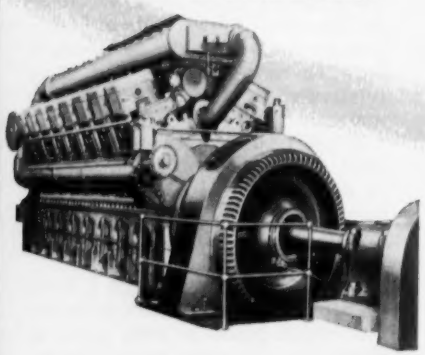
NORDBERG MFG. CO.,
Milwaukee, Wisconsin



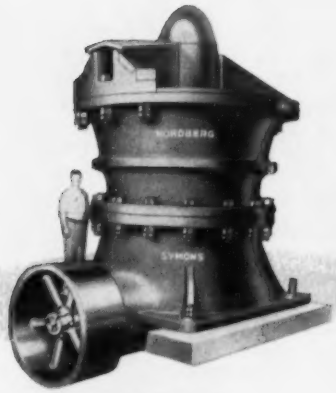
NORDBERG GRINDING MILLS (*Above*): Built for wet or dry, open or closed circuit operation . . . including Rod, Ball, Pebble, Tube and Compartment types, in sizes from 6′ to 13′ dia., up to 50′ in length.



NORDBERG ENGINES (*Below*): Ranging from small "packaged" power units to large stationary engines for base load and standby power, Nordberg engines are built in a wide range of types for Diesel, Duafuel® and Spark-Ignition Gas operation, in sizes to over 12,000 hp.

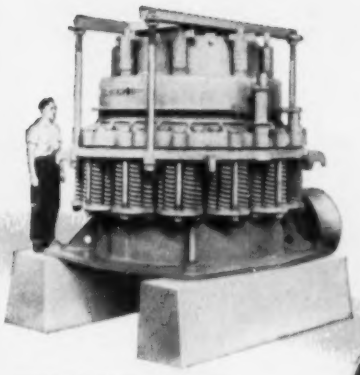


© 1957, Nordberg Mfg. Co.



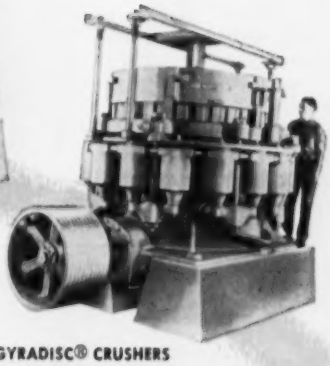
SYMONS® PRIMARY GYRATORY CRUSHERS

(*Above*): These gyratory crushers are built for big tonnage, heavy duty primary breaking in 30", 42", 48", 54", 60" and 72" feed opening sizes, for capacities up to 3500 or more tons per hour.



SYMONS CONE CRUSHERS

(*Above*): For secondary and finer reductions, Symons Cone Crushers, in both Standard and Short Head types, are built in sizes ranging from 22" to 7' in diameter, for capacities from 6 to 900 or more tons per hour.



GYRADISC® CRUSHERS

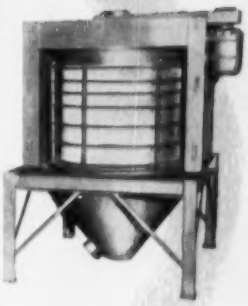
(*Above*): Built to supplement the world renowned Symons Cone Crusher, the Gyradisc Crusher provides a medium for the profitable production of sand sizes of specification material.

NORDBERG KILNS — DRYERS and COOLERS

(*Left*): Built to meet a wide range of requirements, including pyro processing operations, drying, calcining, burning and cooling.

SYMONS V-SCREENS®

(*Right*): Thoroughly proved in use for extremely fine, single cut wet or dry separations. Employs controlled diffused feed and vertical flow of material.



SYMONS VIBRATING BAR GRIZZLIES

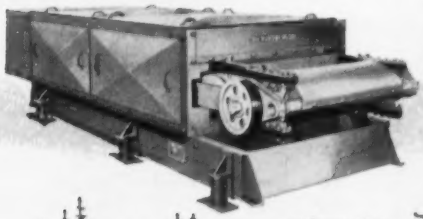
(*Below*): Built for heavy duty large capacity primary scalping service. Particularly effective when handling wet, sticky or gummy rock.

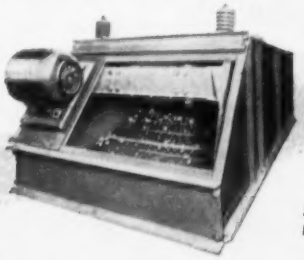
SYMONS HORIZONTAL VIBRATING SCREENS

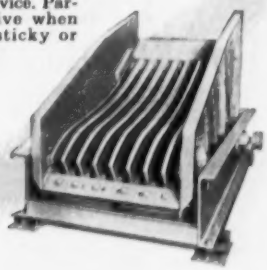
(*Below*): Permit level, large capacity screening of extreme accuracy. Built in single, double and triple deck types in a wide range of widths and lengths. Available with dust housing (as illustrated) for handling multi-aggregate bituminous mix in asphalt work.

SYMONS ROD DECK SCREENS

(*Below*): Highly efficient screening surface of spring steel rods—easily replaced. Especially suited for wet, sticky materials.







SYMONS . . . A Registered Nordberg Trademark Known Throughout The World.

Q357

NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON

TORONTO • MEXICO, D. F. • LONDON • GENEVA • JOHANNESBURG

in the stuffing box, stagger the joints so that the seal is complete.

Pump trouble shows up in two ways: The pump will not prime properly; or it will not deliver enough water even though it is properly primed. The presence of air in the impeller housing can be the cause of both of these failures. There are other reasons for trouble, however, besides the obvious ones of engine failure or clogged screens, which may be difficult to locate. Some of these are listed below:

When Pump Does Not Prime Properly:

Recirculating port is clogged—The recirculating chamber is the resting place of particles that enter through the pump but cannot get out the discharge line. Build-up will not normally effect pump if chamber is cleaned every six months.

LIMA ROADPACKER...
The cost-cutting vibratory compactor—proved on turnpike jobs

This is the hard-hitting, high-capacity machine that penetrates deeper—finishes a 13' width in one to three passes.

On this Ohio Turnpike job near Cleveland, Ohio, the LIMA Roadpacker is compacting a bank run gravel sub-base to an 8" high-density thickness. The LIMA Roadpacker's maneuverability was demonstrated efficiently on this job which required compacting operations in widely scattered sections—the problem of transporting cumbersome equipment and the duplication of units was eliminated.

Course aggregate for macadam bases up to 12" thick can be spread in a single layer, then uniformly compacted to final density over a 13'-1" width with the LIMA Roadpacker.

Single spread, which is permissible only with the vibratory method, reduces material handling by one-half or more—it eliminates backtracking of spreading equipment and contour shaping is needed only once.

The action of the vibration "runs in" screenings to full depth of macadam with only three operations. Much of the labor formerly required to spread, broom and roll is eliminated. The versatile LIMA Roadpacker performs with equal efficiency on both full-width and widening jobs.

Here's how the LIMA Roadpacker speeds up paving operations.

- Drives to job at 30 MPH.
- Compacts equally well traveling forward or reverse—no deadheading or turning around when two passes are required.
- Covers a 13'-1" width, one-half of a two lane road.
- Operator can easily fold end shoes for narrower working widths or for highway travel. Shoes are raised and lowered hydraulically.
- Low maintenance—all working parts are completely enclosed, can even operate under water or dirt. Shoes are driven hydraulically and are pressure-lubricated.

A fact-filled 4-page folder tells how the new LIMA Roadpacker will help you make more paving profits. Write for your copy today.

LIMA SHOVELS • CRANES DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON
Construction Equipment Division—LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation Hamilton • Loewy-Hydropress • Madison • Pelton • Standard Steel Works

Check valve is fouled—Solids drawn up with the liquid may foul the valve so that it refuses to seat properly. This allows the self-priming reservoir to empty, and the pump will not re-prime itself. Clean or replace during over-haul.

Excessive impeller clearance—Wear will cause the amount of clearance between the impeller and the pump housing to exceed 1/32 in., which is the maximum recommended by most manufacturers. Some pumps have adjustment devices that move the impeller closer to the housing. If clearance cannot be lessened, the impeller must be replaced. Impellers should give at least a year's service under normal operating conditions.

Lift is too high—At sea level, the pump should not be used on lifts in excess of 25 ft from the level of the water to the center of the impeller. The shorter the lift, the faster the pump will prime.

Water is too warm—As the temperature of the water increases above 65 deg, the maximum suction lift decreases. When water becomes too warm, the pump cannot create sufficient vacuum to pull the water through it. When this happens, it may be necessary to empty the pump case and replace the warm water with fresh cold water.

When Pump Does Not Deliver Properly:

Excessive clearance between impeller and pump body. (See above).

Hose has collapsed—The rubber lining inside the hose has pulled away from the fabric under the pump's vacuum and clogged the line.

Suction lift is too high—At a 25-ft lift, the pump delivers only about 50% of the water it delivers at a 10-ft lift. At high lifts, friction loss in the suction line reduces the pump's potential capacity. By using a suction hose one size larger than the pump connection, friction is decreased and the capacity of the pump is increased under low heads. This decreases the priming speed, however.

For the tough job of fabricating the steel framework of the Recreation Bowling Center of Houston, Texas, Southern Steel Erectors uses General Electric engine-driven welders. Low maintenance features impress company owner, Mr. R. O. Matthews.

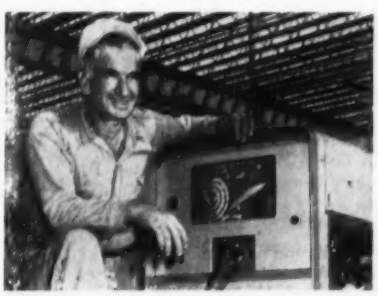
Contractor picks General Electric welders for his tough outdoor construction jobs

Southern Steel Erectors, a Houston, Texas contractor, demands welding equipment that is tough enough to withstand the punishment found in outdoor steel framework construction.

No wonder, then, that R. O. Matthews, owner of the firm, now specifies General Electric engine-driven welders for his welding jobs.

He finds that with General Electric equipment, repairs no longer cause cost-consuming downtime for his company. Some of the reasons for this are:

- **Extra-heavy-gage metal construction minimizes accidental damage.**
- **No exciter is required. A potential trouble spot is eliminated.**
- **Constant-pressure brush springs and pre-set brush holders require no adjustment—are factory set.**
- **Pre-lubricated bearings all but eliminate bearing maintenance.**
- **Steel driving disk holds generator exactly in line with engine shaft—has no expendable parts.**



Weldor E. D. Keck says that during his 15 years as a weldor, using nearly every make of equipment, he has found the new General Electric engine-driven welders are the easiest to use and produce the best welds.

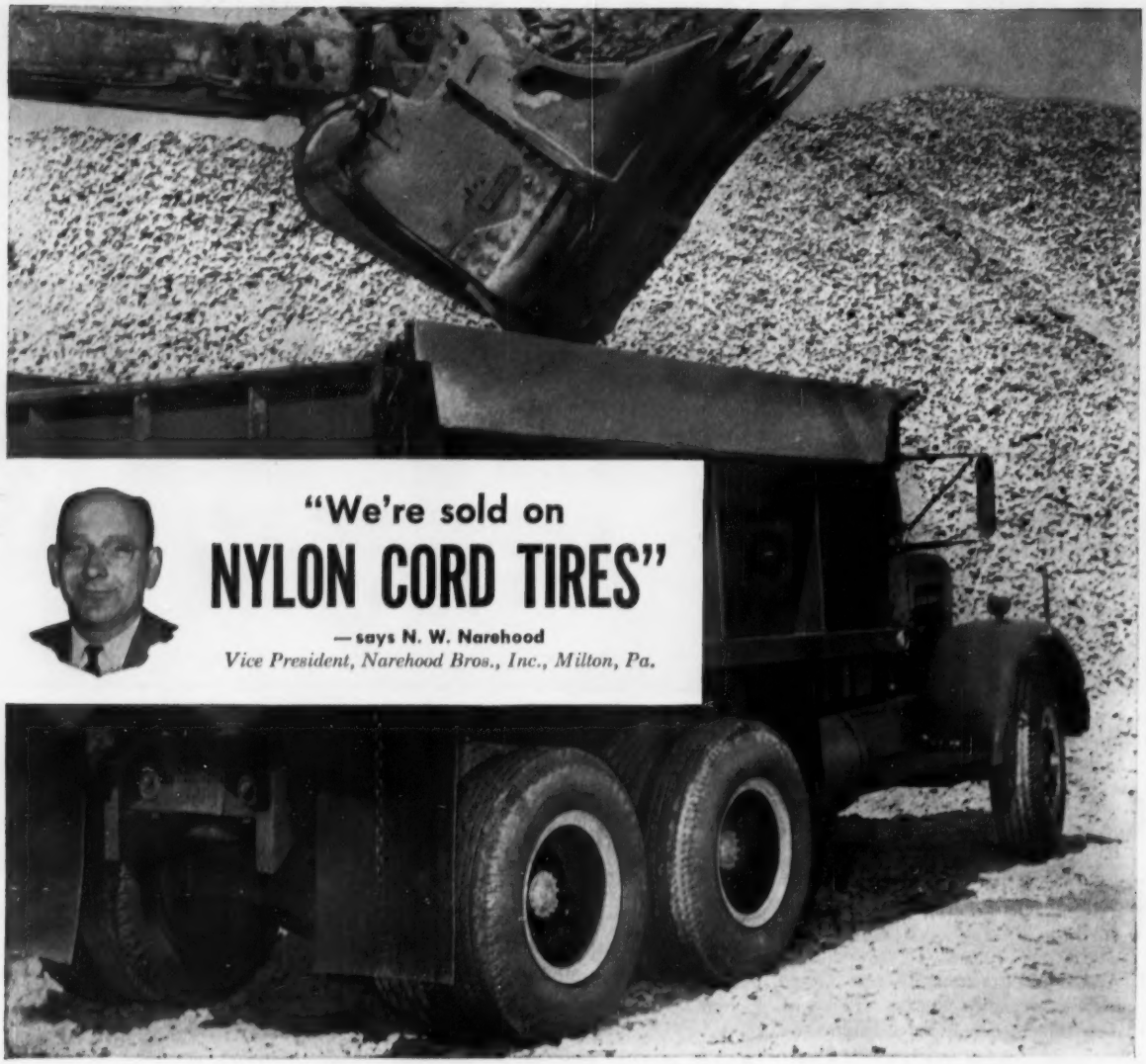
Mr. Matthews also says, "This G-E engine-drive has more power than other welders, and we save on fuel, too. We use only one gallon of gas per hour. Also, I like its adaptability to a wide range of rod sizes."

Weldor E. D. Keck says, "I've found in my 15 years as a weldor that the new G-E engine drive gives you a better weld—easier, because there is no fluctuation. All you do is set the machine and it will remain true and constant."

General Electric's new line includes three sturdy ratings, 200, 300, and 400 amperes. For more information contact your nearest General Electric Welding Distributor, listed in the yellow pages of the telephone book. Or, write section 714-6, General Electric Company, Schenectady, New York.

Don't miss the General Electric display at the AWS Welding show April 9-11 at Convention Hall in Philadelphia. The display will be in booth No. 322.

GENERAL ELECTRIC



"We're sold on NYLON CORD TIRES"

— says N. W. Narehood

Vice President, Narehood Bros., Inc., Milton, Pa.

"We get longer wear, more retreads, fewer failures with nylon cord tires"

"Our road delays due to tire failures are down 90%. We used to have plenty of blowouts, particularly in hot weather. Now they're a rare thing!

"Six days a week, 12 hours a day, we move our 20-truck fleet over a 150-mile radius from the quarry to road-construction sites. The trucks roll over piles of blasted rock with 16-ton loads, yet some of our nylon cord tires have seen over 125,000 miles' service. We've found nylon cord tires have the extra strength to take day-in, day-out punishment and still give us good service after three retreads. You can see why our tire costs are down and why we've authorized total replacement with nylon cord tires for our fleet!"

PROVE TO YOURSELF that nylon cord truck tires give more mileage, more retreads, at the lowest cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes the tough nylon yarns, does not produce tires.)

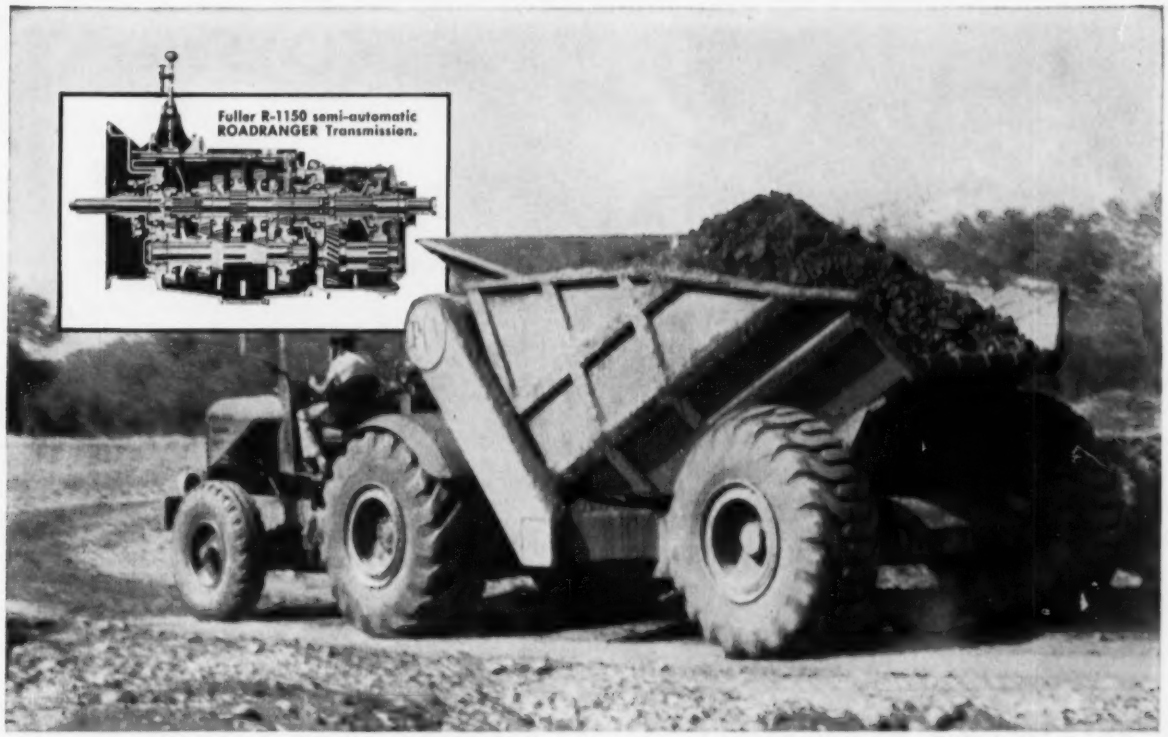
DU PONT NYLON FOR TIRE CORD

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

DU PONT

REG. U. S. PAT. OFF.

FOR TRUCKS AND PASSENGER CARS, TOO . . .
THE STRONGEST, SAFEST TIRES ARE MADE WITH NYLON CORD



The new Wooldridge "Cobrahaul" Rear Dump Unit with Fuller 9-speed R-1150 ROADRANGER Transmission.

FULLER R-1150 ROADRANGER® Transmission standard on new Wooldridge "Cobras"!

The Fuller 9-speed R-1150 ROADRANGER Transmission is *standard equipment* in the new Wooldridge 35-ton, 275 hp diesel "Cobrahaul" Dumper and 26-yard 300 hp diesel "Cobra Quad" Scraper. Haul speeds exceed 32 miles an hour on the big 63,400 lb. unit.

Throughout the complete Wooldridge line . . . from the giant 41-yard scrapers down to and including the 7.5-to-10-yard "Cobrette," Fuller Transmissions are standard on Wooldridge Scrapers and hauling units.

Why? Only the most rugged, dependable transmissions can take the terrific shock loads—sudden starts—stops—torque reversals found in all kinds of off-highway operations from solid rock hauling to soggy swamp jobs.

Fuller Transmissions provide maximum ease of shifting ratios for faster acceleration and long life required for these operating conditions.

In Wooldridge's "Cobrahaul" and "Cobra Quad," the Fuller R-1150 ROADRANGER Transmission offers these additional advantages:

- **No gear splitting—9 selective gear ratios evenly and progressively spaced**
- **Easier, quicker shifts—38% steps between ratios**
- **One shift lever controls 9 forward and 1 reverse speeds**
- **Engines work in peak hp range with greater fuel economy**
- **Less driver fatigue—⅓ less shifting**
- **Range shifts pre-selected—automatic and synchronized**

From over 110 models available for rubber-tired equipment, there's a Fuller Transmission designed to do your job.

really **where horsepower goes to work**

Fuller TRANSMISSIONS

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

WORKERS RELY ON CROSBY CLIPS

Rigging a cable way 600 feet in the air demands the best fittings available to protect men and materials. This crew is assured of maximum safety because their work platform is secured with genuine Crosby* Clips. This clip, quickly identified by the "Red U-Bolt*" is the number one choice on every job where maximum safety and holding power is essential. Look for the red U-bolt—you'll see it securing wire rope in every industry! And Crosby is the *only clip* available in sizes to fit every rope from ⅛" to 3"! Proved design and quality controlled manufacture—finest steel, drop forged base, galvanized—results in consistently reliable performance.

THIMBLES INCREASE ROPE LIFE, SAFETY

Unless protected by a thimble, wire rope can be seriously damaged by heavy lifts that crush the strands at the load point. A light thimble can collapse and damage the rope. For positive rope protection and safety, specify Crosby Laughlin heavy plow steel thimbles with the extra heavy steel section design that stands up under maximum loads. Plow Steel Thimbles are available in sizes to fit ¼" to 2¼" wire rope. Stainless Steel Thimbles are offered in selected sizes.

From one source, Crosby Laughlin Lebus, you get the world's most complete line of fittings: Crosby Clips and "Load Rated" Blocks; Crosby-Laughlin drop forged shackles, hooks, Missing Links*, turnbuckles, thimbles, and other fittings; famous drop forged Lebus Loadbinders and drop forged Snatchblocks! Your Crosby Laughlin Lebus Distributor is your one stop fittings supplier—see him next time you need *any* fittings!

*REGISTERED TRADEMARK

World's Most Complete Line of Fittings For Wire Rope and Chain

CROSBY LAUGHLIN LEBUS

FORT WAYNE 1, INDIANA

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributors

Baldwin-Lima-Hamilton Corp.: Eastern Equipment Sales, Inc.—with offices in Springfield, Mass, and West Haven, Conn.—will distribute Lima shovels, cranes, draglines, and pull shovels. The distributorship will cover the entire state of Connecticut and three countries in Mass. Eastern Equipment is also an Austin-Western distributor.

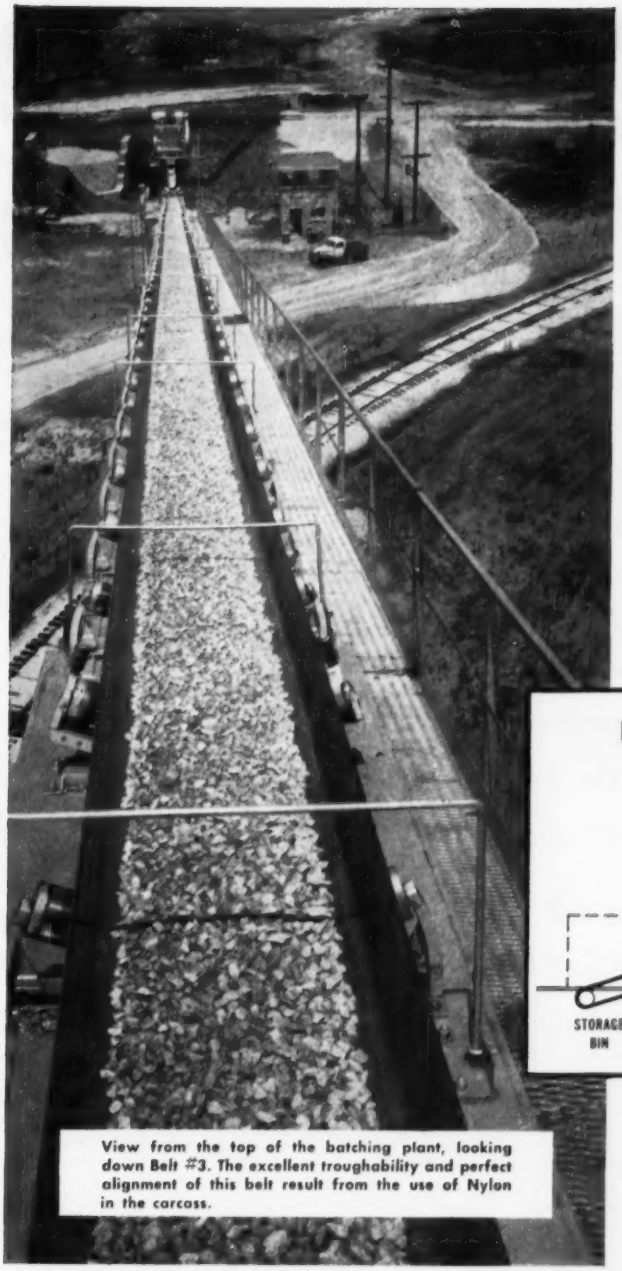
Euclid Div., GMC: Interstate Tractor & Equipment Co. is the new authorized Euclid dealer in Oregon and the river counties of Southwestern Washington state. Interstate recently purchased the majority assets of P. L. Crooks & Co., former Euclid dealer in that area. Interstate's main office is at Portland, Ore.

Concrete Transport Mixer Co.: Several new distributors for the Rocket mixer have been announced: The Arizona territory is now covered by Jost Concrete Products Co. of Prescott and the Superior Coach Sales & Service of Phoenix; Virginia is handled by McIlhany Equipment Co., Inc. of Roanoke and Richmond; the northern half of Georgia is covered by Stith Equipment Co. of Atlanta; Louisiana is covered by Jackson Machinery Co. of New Orleans; and the eastern half of Michigan is handled by Acme Equipment Co. of Detroit.

On the Sales Front

LeTourneau Westinghouse Co.: W. T. Kind is the new district representative for LeTourneau-Westinghouse in the Pacific Northwest. Kind has charge of territory that includes all of Washington and Oregon, northern Idaho, a small section of northern California, British Columbia, and Alaska.

Four-Wheel Drive Auto Co.: Lynn F. Perrott and Virgil Phelps are new district sales managers for the

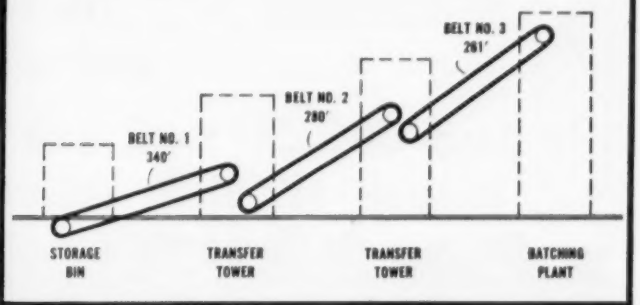


View from the top of the batching plant, looking down Belt #3. The excellent troughability and perfect alignment of this belt result from the use of Nylon in the carcass.

US RUBBER CONVEYOR BELTS

Push-Button Control and U. S. Conveyor Belts help turn out 120 cu. yds. of concrete per hour

FLOW CHART OF CONVEYOR BELT SYSTEM.



"This is the largest concrete plant* of its type in the world," says the plant's manager. "In aiming to turn out the best concrete at the lowest possible cost we require a highly mechanized operation."

And that's what this plant has. Almost 2,000 feet of U. S. Rubber's 30" wide U. S. Matchless patented Style XN conveyor belting carries raw materials through the reclaiming tunnel, then up a steep grade to a turn head—electrically controlled—and finally discharges the cargo into the always-hungry jaws of the huge batching plant.

One man in a control tower oversees the entire operation, from storage pits to plant bins. The control board tells him when a bin is getting low. By pressing a button he can start one of the three U. S. Belts hauling sand, stone, or other aggregates to the proper bin. "We expect many years' service from these belts," adds the plant's president, J. Roy "Cap'n" Pennell.

This is another good example of U. S. Rubber's Three-Way Engineering, in which "U. S." engineers work as a team with the plant engineers and the conveyor system engineers . . . to obtain the *right* belt for the job. This type of assistance, plus a complete line of conveyor belting, can be obtained at any of our 28 District Sales Offices, or contact us at Rockefeller Center, New York 20, New York.

In Canada, Dominion Rubber Co., Ltd.

*Greenville Concrete Co., Greenville, S. C.

US RUBBER Mechanical Goods Division **United States Rubber**

new Highway 40 by-pass gets a sturdy "backbone" with LACLEDE WELDED WIRE FABRIC

OTHER LACLEDE
HIGHWAY STEELS ARE...

welded dowel spacers
multi-rib round reinforcing bars
center joints
recess joints
tie bars
accessories

MISSOURI
HIGHWAY DEPARTMENT

GENERAL CONTRACTOR:
Cameron, Joyce and Company
Keokuk, Iowa

LACLEDE®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

firm that manufactures custom-engineered four and six-wheel-drive trucks. Perrott will cover Washington, Oregon, Idaho, Alaska and British Columbia. Phelps takes over as FWD district sales manager for Ohio, Kentucky, W. Virginia, and parts of New York and Pennsylvania. His headquarters will be at Akron.

Galion Iron Works: Rex F. Price is the district representative for Iowa, Wisconsin, Minnesota, North Dakota, and South Dakota. He will continue to represent Galion in Oklahoma, Nebraska, Kansas, Missouri, and several counties in southwestern Illinois. His headquarters are now located in Mission, Kansas.

In the Main Office

Anthony Co.: Frank C. McManus has been elected president of Anthony, manufacturers of dump bodies, frameless dump trailers and Teleramic hoists. He succeeds Glenn A. Duis, who resigned to devote more time to personal interests.

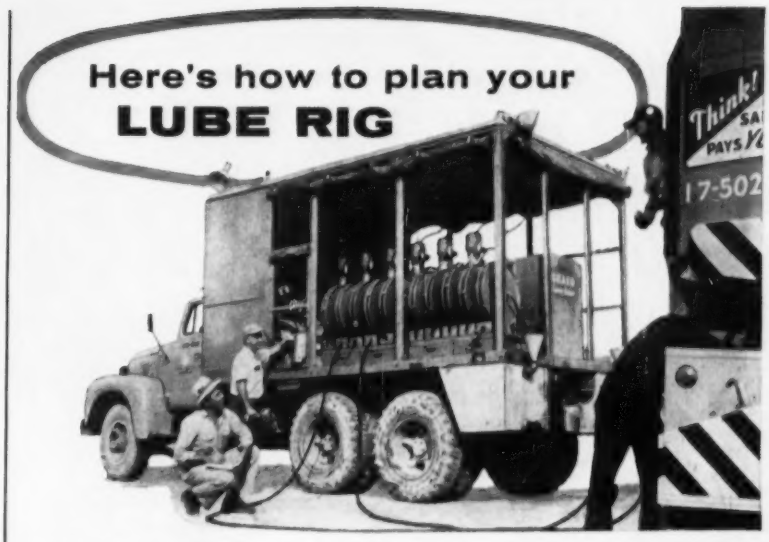
Illinois Gear & Machinery Co.: Three men with more than 20 yr of experience with Illinois Gear, a leading manufacturer of precision gears, have been elected vice presidents. They are T. S. Pacer, E. B. Smiley, and G. P. Sullivan. The announcement was made by V. P. Reilly, president of the Chicago firm.

Wagner Tractor Co.: J. Burke Long has been named a director and vice president for sales promotion and expansion. Long was formerly president of Mixermobile Co. His first project with Wagner will be to establish a larger dealer system for the Wagner four-wheel-drive tractors.

Oliver Corp.: Samuel W. White, Jr. and Donald W. Koegle have been elected vice presidents, it was announced by Alva W. Phelps, chairman of the board and president. White will head the industrial sales division and Koegle will have charge of domestic farm machinery sales. Edward H. Fisher, vice president, has been appointed head of the newly created special products division.

continued on next page

Here's how to plan your
LUBE RIG



Call on Graco's experience in lube rig design . . . select Graco's quality lube components that fit any need. Our engineers have helped design hundreds of "job planned" lube trucks. They can help you if you need assistance.

GRACO
GRAY COMPANY, INC.
338 Graco Square, Minneapolis 13, Minn.
Factory Branches: New York (Long Island City) Detroit • Philadelphia • Chicago Atlanta • Houston • San Francisco.

1 Decide your needs. What's required for your equipment and service schedules?
2 Using Graco catalog, select reels. Choose size, power ratio of pumps.
3 Make rough sketch. Draw simple plan of your truck platform, giving dimensions and capacity. We'll plan from here.

BEFORE YOU BEGIN, send for new helpful 24 page catalog. Shows special units. Illustrates components. Ask for Graco Catalog 701.

"I've Dug Over 35,000 Feet of Trenches With No Repairs"

"I use the 524T Pow-R-Ditcher for plastic and steel oil lines, digging under severe soil conditions. To date I've dug 35,000 feet with no repair cost. Does an excellent ditching job."

Mat F. Dwyer
Dwyer's Ditching Service
Wellington, Kansas

Pow-R-Ditcher Is Ideal For Foundation Footings, Gas, Water and Sewage Lines

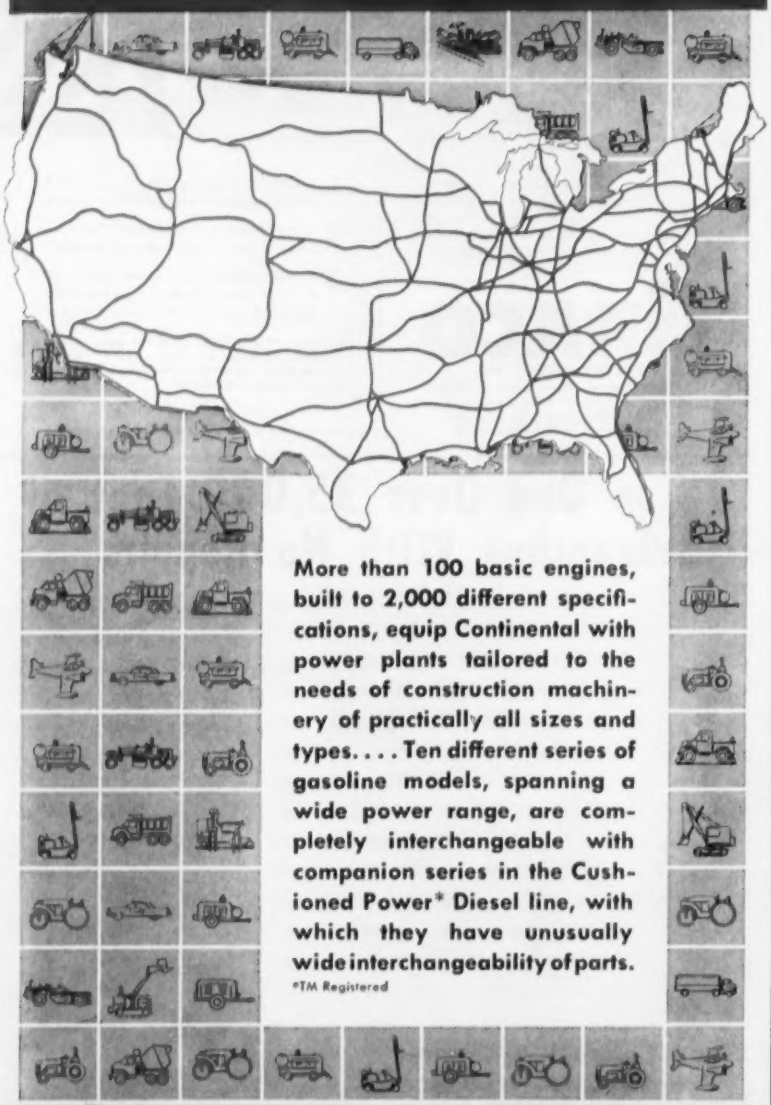
Thousands used by contractors, municipalities, utility companies, custom operators, etc. Digs 8" to 24" Wide, down to 6' deep, at 1' - 15' per minute. Self-propelled. One man operated. Low cost. Smaller models also available. Write for complete information.

Some Excellent Distributor Territory Available.

VERMEER MFG. CO., Pella, Iowa

MORE Power...
BETTER Power...
for Every Phase of the
BIG ROAD PROGRAM!

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD



More than 100 basic engines, built to 2,000 different specifications, equip Continental with power plants tailored to the needs of construction machinery of practically all sizes and types. . . . Ten different series of gasoline models, spanning a wide power range, are completely interchangeable with companion series in the Cushioned Power* Diesel line, with which they have unusually wide interchangeability of parts.

*TM Registered

Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6210 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA), GA.

SALES AND SERVICE . . .
continued

Frank G. Hough Co.: Madison L. Crawford, Hough's advertising manager, announces the appointment of Robert D. Schwartz as an assistant. Schwartz was formerly with the Arthur Grossman Advertising, Inc., of Chicago. He joins Robert Connolly, also an assistant to the advertising manager.

Associations

Portland Cement Association: The association has announced an expansion of its field services to cement users. A new regional office is being opened in Los Angeles to supervise activities in the Los Angeles and Seattle district offices, and new district offices are being opened in Baltimore, Md., Trenton, N.J., Portland, Me., and Louisville, Ky. Personnel are being added or transferred to several of its other 28 district offices and its four regional offices.

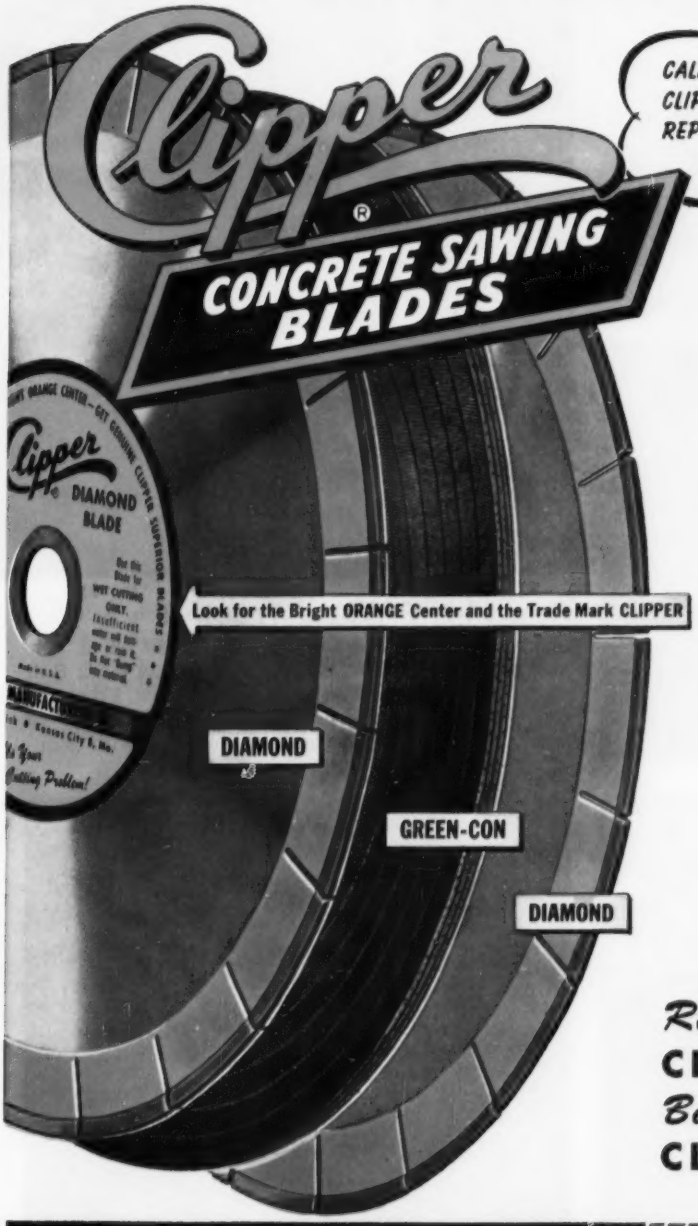
Special Mention

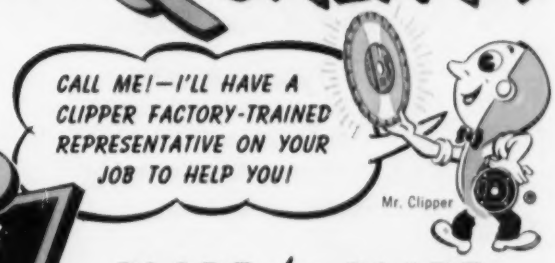
Kaiser Aluminum & Chemical Corp.: The wire and cable business of United States Rubber Co. was sold to Kaiser on Feb. 1. The sale, which was for cash, includes the plant, property, and equipment of the U.S. Rubber plant at Bristol, R. I. In addition, Kaiser Aluminum takes over U.S. Rubber's wire and cable inventories, sales organization, and distribution network. U. S. Rubber has produced insulated wire and cable at the Bristol plant since 1892.

Pettibone-Mulliken Corp.: Mercury Manufacturing Co. of Chicago, makers of tow tractors, electric lift trucks, and trailers, has been acquired by Pettibone Mulliken Corp. for an exchange of stock. Mercury will be operated at its present location and use the same personnel and distributors. E. J. Seifert, president of Pettibone-Mulliken, will become chairman of the board of Mercury.

Superior Scaffold Co.: Superior has terminated its manufacturing and distribution arrangement with National Plaster Block Co. of Philadelphia. All manufacturing and dealer sales will be made through the Culver City, Cal., plant. In cities where Superior has no dealers, sales will be made direct to contractors on a delivered basis.

CLIPPER *Sells* MORE... *Because* CLIPPER *Sells* QUALITY!





BLADE *for* BLADE
CUT *for* CUT...
Your BEST BUY is CLIPPER!

Clipper offers the only complete range of DIAMOND BLADES... and GREEN-CON ABRASIVE BLADES for all concrete sawing jobs. Use DIAMOND BLADES for green or cured concrete with ANY aggregate! Use GREEN-CON ABRASIVES for cutting green concrete. Clipper's FACTORY-TRAINED REPRESENTATIVES are always on call to help you with your concrete sawing problems.

You Cannot Buy A Better Blade than Clipper!

Remember...
CLIPPER *Sells* MORE
Because...
CLIPPER *Sells* QUALITY!

Clipper® KANSAS CITY, MO.

Better Mail the Coupon NOW!

● **Genuine Clipper Products are Sold Only Direct, by Factory-Trained Representatives from Factory Branches in Principal Cities, Coast to Coast. Consult Your Phone Book, or Mail Coupon for Same-Day Service.**

CLIPPER MANUFACTURING CO.
2809 N. Warwick • Kansas City 8, Mo. 525X

☐ Send information on CLIPPER GREEN-CON ABRASIVE BLADES FOR Green Concrete Sawing.

I'd also like to know about:

☐ Diamond Blades for Concrete Sawing ☐ Concrete Saws
☐ Masonry Abrasive and Diamond Blades ☐ Masonry Saws
☐ Please have my FACTORY-TRAINED REPRESENTATIVE Call on me.

NAME _____

ADDRESS _____

CITY _____ STATE _____

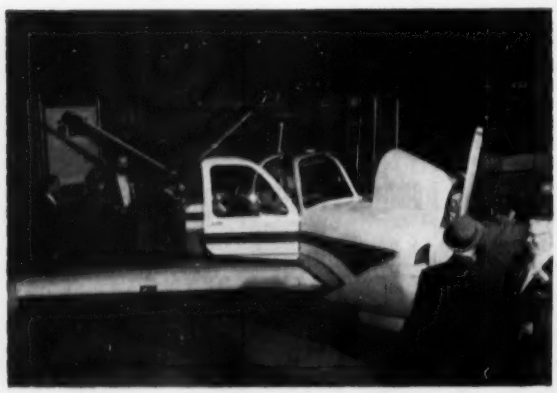
Construction Equipment News . . .

At the Road Show: Variety, Quality

Following up last month's exclusive on-the-spot report from Chicago, CM&E presents additional information and photos of equipment at the Road Show.

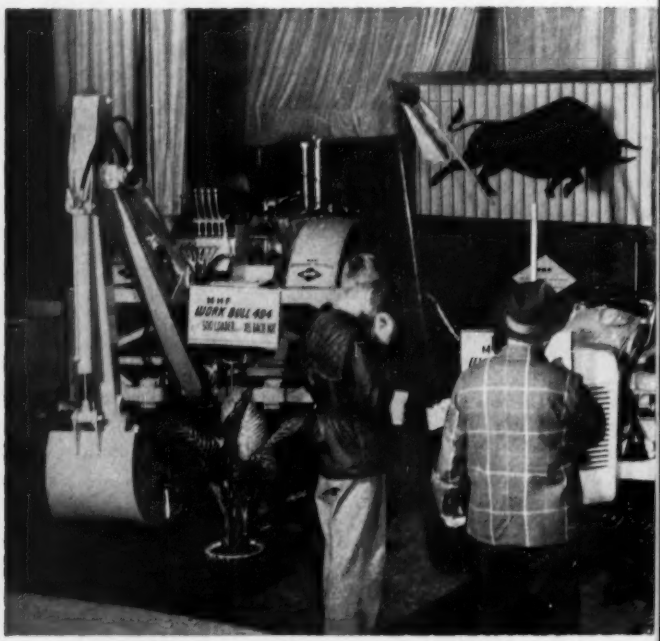
Barber-Greene on Rubber

Rubber-tired finisher, Barber-Greene's first, is called strictly experimental by company officials. Improvements in popular crawler finisher, rear, give it increased work speeds.—**Barber-Greene Co., Aurora, Ill.**



New Contractors' Tool

1957 Beechcraft Bonanza draws Road Show crowds. Designed especially for executive service, the single-engined plane carries four passengers comfortably.—**Beech Aircraft Corp., Wichita, Kansas.**

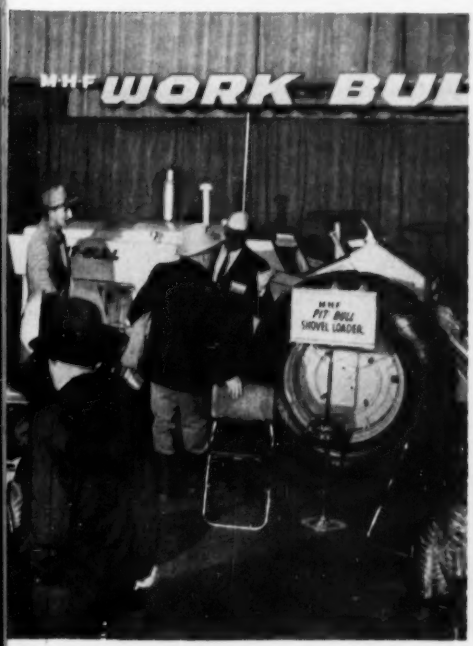


New M-H-F Wheel Tractors

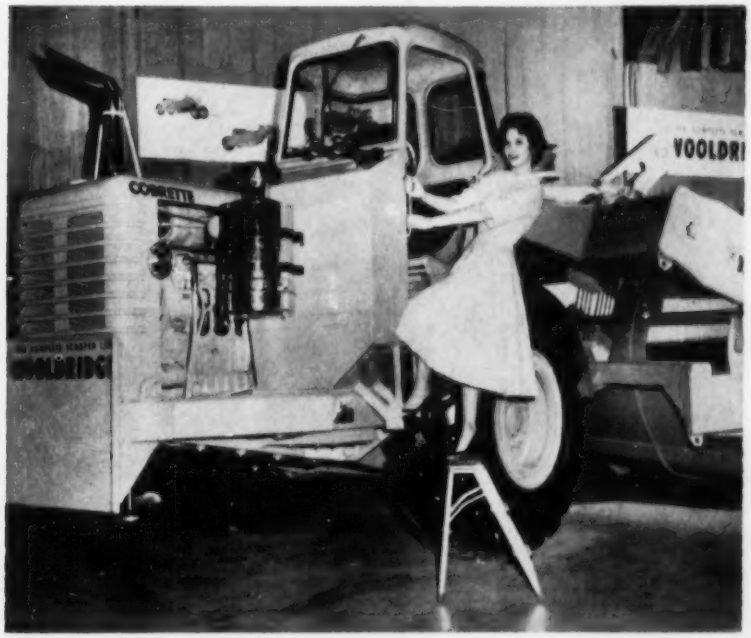
Massey-Harris-Ferguson, which introduced a line of wheel tractors late last year, showed its Work Bull models for the first time at the Road Show. From left to right, photo shows 52-hp Work Bull with ¾-yd loader and backhoe; 34-hp model 202 with side-

World's Heaviest Grader

Weighing more than 40,000 lb, Galion T-700 grader features Grade-O-Matic drive, which combines Cummins engine with Allison torque converter and transmission.—**Galion Iron Works & Mfg. Co., Galion, Ohio.**



mounted mower; and Pit Bull ¾-yd loader. Twenty attachments are available for the line, which also includes 42-hp tractor and 32-hp fork lift unit.—**Massey-Harris-Ferguson, Inc., Racine, Wis.**



Beauty and the Brute

Miss Detroit Diesel climbs aboard redesigned 10-yd Wooldridge Corbrette scraper, now powered by 173-hp Detroit Turbopower diesel through Torqmatic transmission. Improvements include wider tires and air-electric "cable saver" that disengages power control clutches before cable is endangered.—**Wooldridge Mfg. Div., Sunnyvale, Cal.**

Four-Wheel-Steer Loader

The 6-yd Scoopmobile features both four-wheel drive and four-wheel steering. Powered by a Cummins Turbodiesel, the loader can handle up to 30,000 lb, dump its load at 12 ft.—**Mixermobile Mfgrs., Portland, Ore.**

Self-Propelled Wagon Drill

Wheel-mounted, self-propelled wagon drill (still unnamed) is addition to Joy line, which also includes popular crawler-mounted 4½-in. Junior Challenger, rear.—**Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.**

A SIDE-DUMP loader bucket, which permits a tractor-shovel operator to dig and discharge into a truck without turning, was introduced as a new Traxcavator attachment by Caterpillar. On-the-job tests show the side-dump bucket cuts cycle time by as much as 30%.

These tests show that the attachment offers other advantages: Because the crawlers do not swing to position the bucket, the loading area is not scuffed and less material is jarred from the heaped bucket; the machine can work in tight places and along busy roads; wear on track assemblies is reduced. Operators have also found the load can be accurately spotted in a truck because the load is discharged from the side of the bucket instead of across the broad front.

The side-dump bucket, which is designed for loading loose materials, is not designed to handle rugged excavating jobs or for rock work. It mounts on the Traxcavator lift and tilt arms, and it can be quickly replaced with the standard excavating bucket.

The bucket is side-dumped through a hydraulic cylinder mounted on the bucket carriage. It is hinged to the carriage and locked in place when in the conventional digging position. To side-dump the bucket, the operator uses a control lever on his right to actuate the hydraulic cylinder. The dumping cylinder unlocks the bucket from the carriage and swings it into a side dumping angle of 60 deg.

The side-dumping end of the 1½-yd bucket is ramped at a steep angle to facilitate unloading of sticky material. The bucket is about 18 in. wider than the standard Traxcavator bucket so that side-casting distance is sufficient to dump a load into the center of an 8-ft truck bed, a factor which reduces spillage.—**Caterpillar Tractor Co., Peoria, Ill.**

A 10-YD MODEL of its popular Dumptor—featuring a dual seat arrangement that facilitates in-line loading and dumping—has been introduced by Koehring. The operator faces his load when dumping or when traveling in reverse with the new control system. A single set of foot levers kick over to face the driver when he changes seats.

The new Dumptor, which handles 8 yd struck, has a payload capacity of 28,000 lb. It is powered by a GMC diesel that develops 168 bhp and 555 lb of torque at 2100 rpm. An Allison torque converter with a hydraulic rear disconnect clutch is standard. The truck has a speed range of 8.5-mph maximum in low and 20-mph maximum in high.

The Dumptor, which has a 10 ft 7 in. wheelbase, has a turning radius of 21½-ft. Tires are 21.00x 25 on the drive wheels and 12.00x 25 on the steering wheels: Unloaded, the truck weighs 28,000 lb. The body is 10 ft wide and 10 ft, 3⅛-in. long.—**Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis.**

continued on page 257

GENERAL NYGEN® TIRES

CUT TIRE COSTS 30% FOR FISHER CONTRACTING CO. ON BRUTAL MONTGOMERY DAM JOB!

Another Outstanding Record for Stronger-than-Steel NYGEN® CORD

High in the Rockies, on what contractors agree is one of the most difficult rock projects ever undertaken, General Truck Tires daily are proving that they're built tougher for the toughest jobs. Unexcelled for strength and durability with *exclusive* Nygen Cord construction, Generals provide the absolute maximum in job-hazard protection. Let them prove their worth to you *now* on your toughest assignment.

specify GENERALS on your new equipment

THE GENERAL TRUCK TIRE

THE GENERAL TIRE & RUBBER CO. • Akron, Ohio

how to get the most out of HOLLOW DRILL RODS

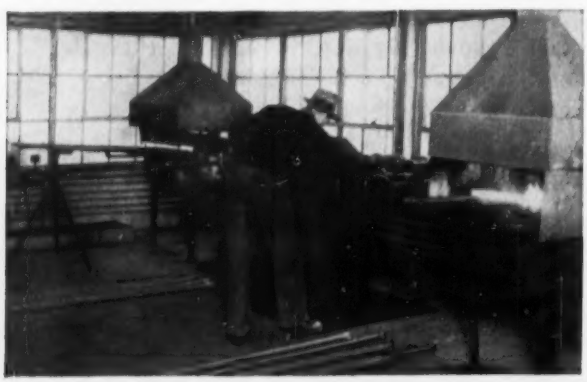
Detachable carbide insert bits are a cost-cutting tool for the hard rock driller. But their use presents problems to the blacksmith. One problem is the premature failure of the attachment on the drill rod. When that happens, time is wasted in trying to recover the bit and, often, valuable bits are lost.

But, with new alloy steels such as Crucible CA DOUBLE DIAMOND or 4E, plus careful control of operations in the forge shop, you can keep failures to a practical minimum.

For example, prevent SCALING OF THREADED SECTION

Excess scaling may produce undersize threads, loose fitting bits and ultimate mechanical failure of the drill rod due to poor stress distribution. Here are a few precautions to take to prevent excess scaling:

TIME AND TEMPERATURE—



Of primary importance are the time and temperature which the heat-treater selects for the job. Although they will vary somewhat with the composition of the steel and the size of the rod, time and temperatures should be selected which are the minimum at which the desired result can be obtained. Excess furnace time or temperature will result in excessive scale formation.

FURNACE ATMOSPHERE – Avoid a highly oxidizing flame. The higher the excess oxygen content, the greater the tendency for scale and decarburization to form. And a reducing flame leads to carburizing brittle threads. The furnace best operates with a "soft" smoky flame or under near neutral conditions.

SCALE REMOVAL—

Scale is abrasive, and unless what scale does occur is removed, thread wear results. Wire brushing is a fast, convenient and safe method for removing scale.

Crucible hollow drill rods are tough, strong—made to tool steel standards. Their *extra* quality means less rod breakage—fewer valuable bits lost. So specify Crucible hollow drill rods for your next job. They're quickly available in the sizes, types and grades you need. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

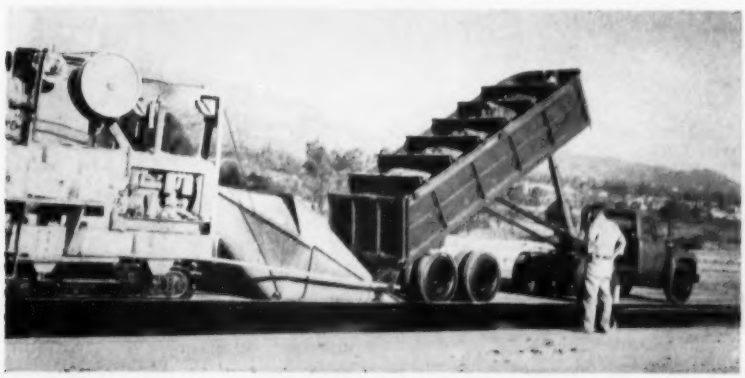
Crucible Steel Company of America

THE CHORE-MASTER, a new excavator reaching, grading, and digging attachment with a telescoping boom and a hydraulically controlled bucket, has been introduced by Quick-Way.

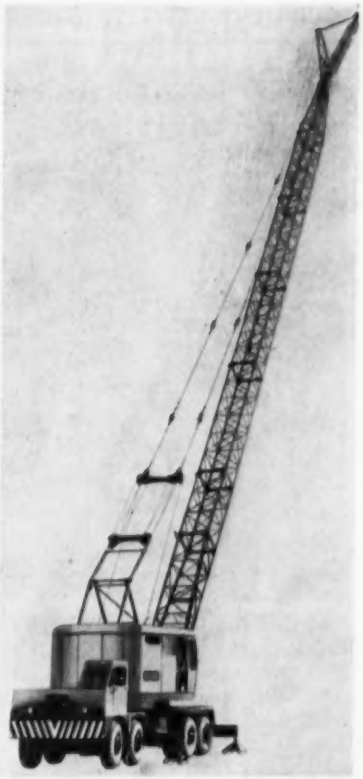
The Chore-Master mounts on a special gantry that is interchangeable with the other standard attachments on Quick-Way cranes. The telescoping action is operated by a hydraulic cylinder, and a second ram opens and closes the bucket with a wrist action. A hydraulic motor rotates the bucket 50 deg in either direction on the end of the boom.

The boom is raised by cable from the main hoist drum of the crane and down pressure is applied by cable from the haul back drum. A cable from the boom hoist raises the gantry, which collapses for easy mounting and for traveling.

All hydraulic actions are controlled by a single lever in the cab. The telescoping boom extends to a radius of 33 ft with the bucket open and it retracts to a radius of 21 ft. The boom can be raised to an angle of 45 deg so that the attachment can grade slopes as high as 27 ft. The Chore-Master can reach a maximum depth of 13 ft. **—Quick-Way Truck Shovel Co., Denver, Colo.**



BIG BATCH CARRIER—Cook Bros.' new Stabilift frameless semi-dump trailer can be fitted out as a large capacity batch carrier for concrete paving jobs. Field tests show that the 20-ton payload capacity of the new trailer permits the unit to haul up to seven 5,500-lb batches a trip. Its low center of gravity and double rear axles give it the stability to overcome many of the disadvantages of semi trailers on batching applications. The Stabilift can also handle hot materials for asphalt paving machines, according to the company, and it can be used efficiently on fill and spreading jobs.**—Cook Bros. Equipment Co., 3334 San Fernando Rd., Los Angeles, Cal.**

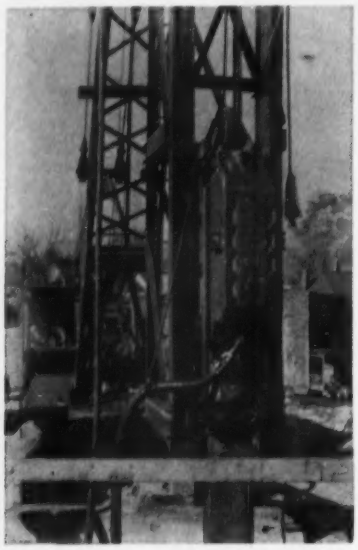


IN LINE with the trend toward bigger truck cranes, Harnischfeger Corp. has taken the wraps off a rugged and maneuverable machine with a 45-ton lift capacity. The unit gets its 45-ton rating based on a 15-ft radius instead of the usual 12-ft rating. This is important because most lifting is done well outside a 12-ft radius. The P&H crane, called the 575-TC, can handle up to 170 ft of boom unassisted.

Harnischfeger mounts the upper machinery on a new carrier designed to meet state codes by distributing weight over a greater number of axles. The carrier features a twin front axle arrangement equipped with hydraulic steering boosters. The machine weighs 96,000 lb in standard trim, but for over-the-highway travel the counterweight, outriggers and floats can be removed and gross weight becomes 70,000 lb. This means that the bearing load per axle is less than 18,000 lb.

The upper assembly includes such P&H features as a live roller circle, independent planetary boom lowering, triple-safe boom hoist, and smooth operating hydraulic controls. The carrier has 12 14:00 x20 tires that provide good traction on rough terrain.**—Harnischfeger Corp., Milwaukee 46, Wis.**

continued on next page



ALTHOUGH it delivers 16,000-ft-lb blows at a rate of 110 per min, McKiernan-Terry's new C-5 diesel pile hammer weighs only 11,800 lb. The compound steam-air hammer is said to require only about half the amount of power needed to operate conventional hammers of similar rated striking capacities, and because of its low weight, it can be handled by smaller cranes.

The hammer is said to have a low striking velocity, a feature which cuts down on pile head deformation even when driving thin-wall pipe piles. The hammer takes a universal drive cap that will accommodate several sizes of pipe, H-beam, or timber piles.

The hammer is self-stopping when no support exists under the anvil block and it will automatically go back into operation when support is re-established. Upstroke hammer jump is low because all of the energy of the motive fluid, which is exhausted at 17 psi, is utilized.

Maintenance of the hammer, which has only four moving parts, is said to be low. Ease-of-maintenance design features include a valve system with poppet valves for motive fluid admission and exhaust, a one-piece cylindrical ram, externally removable valve-system subassemblies, and the elimination of mechanical ram-to-valve-connections. A Prototype of the C-5 was tested for more than a year without trouble. At the end of that period, the packing was still usable.—**McKiernan-Terry Corp., Pile Hammer Div., Dover, N. J.**

EASILY TRANSPORTED on its own wheels, the Universal 880 Senior "R" Gravelmaster plant offers a 1036 jaw crusher, 3026 roll crusher, 4x12-ft 2½-deck screen, and 30-in. wide conveyors in an extremely compact plant. The new gravel crushing, screening, and loading plant is said to be especially efficient in areas where a high percentage of secondary crushing or a big volume of screening is required.

The 1036 primary jaw crusher employs Universal's overhead eccentric action that provides two crushing blows with each revolution of the shaft. Force feed and force discharge action are other features. The secondary roll crusher has 26-in. wide manganese steel shells. Roller bearing construction with a star gear drive cut down maintenance requirements. The big screen, which offers 48 ft of working area, is mounted on an incline and has a gyrating action.

The Senior "R" is designed so that it easily can move over roads. Height, weight, length, and wheelbase are kept at a minimum that meets all state limits.—**Universal Engineering Corp., Pettibone Mulliken Corp., Cedar Rapids, Iowa.**

AN IN-PLACE MATERIALS REDUCER, towed at 1 to 1½-mph, is said to produce roadbed aggregates from native or over-sized materials at the rate of from 150 to 400 yph, depending upon the abrasive properties of the materials.

Called the Bros Preparator, the tow-type rock breaker is powered by a 182-hp diesel engine. It can reduce windrowed rock up to 30 in. in dia, according to the manufacturer. Twenty-two special alloy hammers, rotating at 1,000 rpm, will reduce most materials to 2-in. minus in one pass. For tough materials, two passes are usually required.

The machine can be towed by almost any small-horsepower tractor that has enough underclearance to bridge the windrowed material.

Another Bros machine, the Roto-Mixer, is designed to mix, pulverize, blend, and stabilize all types of soils and aggregates. It mixes at any depth down to 12 in. and at widths up to 7 ft. A choice of mixing tools, one for heavy chipping and the other for lighter mixing or reclamation, is available. Both sides of the rotor are coupled to the power unit with a heavy chain drive, and all final drives are enclosed in dirt-proof housings. Height of the rotor and the hood are controlled hydraulically but independently of each other.—**Road Machinery Div., Wm. Bros Boiler & Mfg. Co., 1057 10th Ave. S.E., Minneapolis 14, Minn.**

continued on page 263

why BANTAMS belong in your equipment lineup

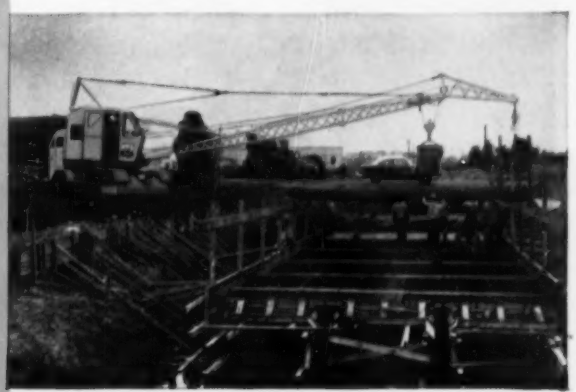
No matter how big the project may be, there are dozens of assignments where the fast, mobile BANTAM can take over to save you time and money. Digging, trenching, backfilling, lifting, loading, erecting, pile driving, pouring—these are only a few. And you will be surprised at the big production BANTAMS give you—with any one of 9 different quick-change attachments.

Versatility, easy operation and low cost make BANTAM a profitable investment for you. Many contractors have found they can own 2 BANTAMS and enjoy greater flexibility and bigger production than with one larger machine. It's worth thinking about in your own operation. And remember, more than 7500 successful installations make BANTAM the most job-proved rig in the industry!

This C-35 BANTAM crawler with back hoe completed 2400' of 9' trench, placed all tile and backfilled in 11½ days at Dexter, Mich. Fast, low-cost production enabled this contractor to earn $18,000 with his BANTAM in only 9 months.

This BANTAM T-35 on 300 carrier loads and places steel for repairing the bridge over the Mississippi at Keokuk, Iowa. It was selected as the only machine within the size and weight requirements capable of handling this ticklish job.

Equipped with special 42" bucket, this BANTAM Self-Propelled dug over 63,000' for curbs and gutters near Detroit—averaged 1000' per day with *no hand labor*. The BANTAM CR-35 offers complete one-man operation—costs thousands of dollars less than other rigs of this type.



Pouring concrete on this job at Bangor, Maine, the 7-ton BANTAM with 35' boom and 8' jib saves $1.55 per yd.—cuts man power in half. The owner says, "Two BANTAMS out-earn one larger machine."

BANTAMS are offered on 3 different mountings—carrier, crawler and self-propelled—with lifting capacities ranging from 5 to 7 tons. Carrier mounted machines are available with the most modern remote control. Ask your nearby BANTAM distributor to demonstrate on your present job, or write us for literature.

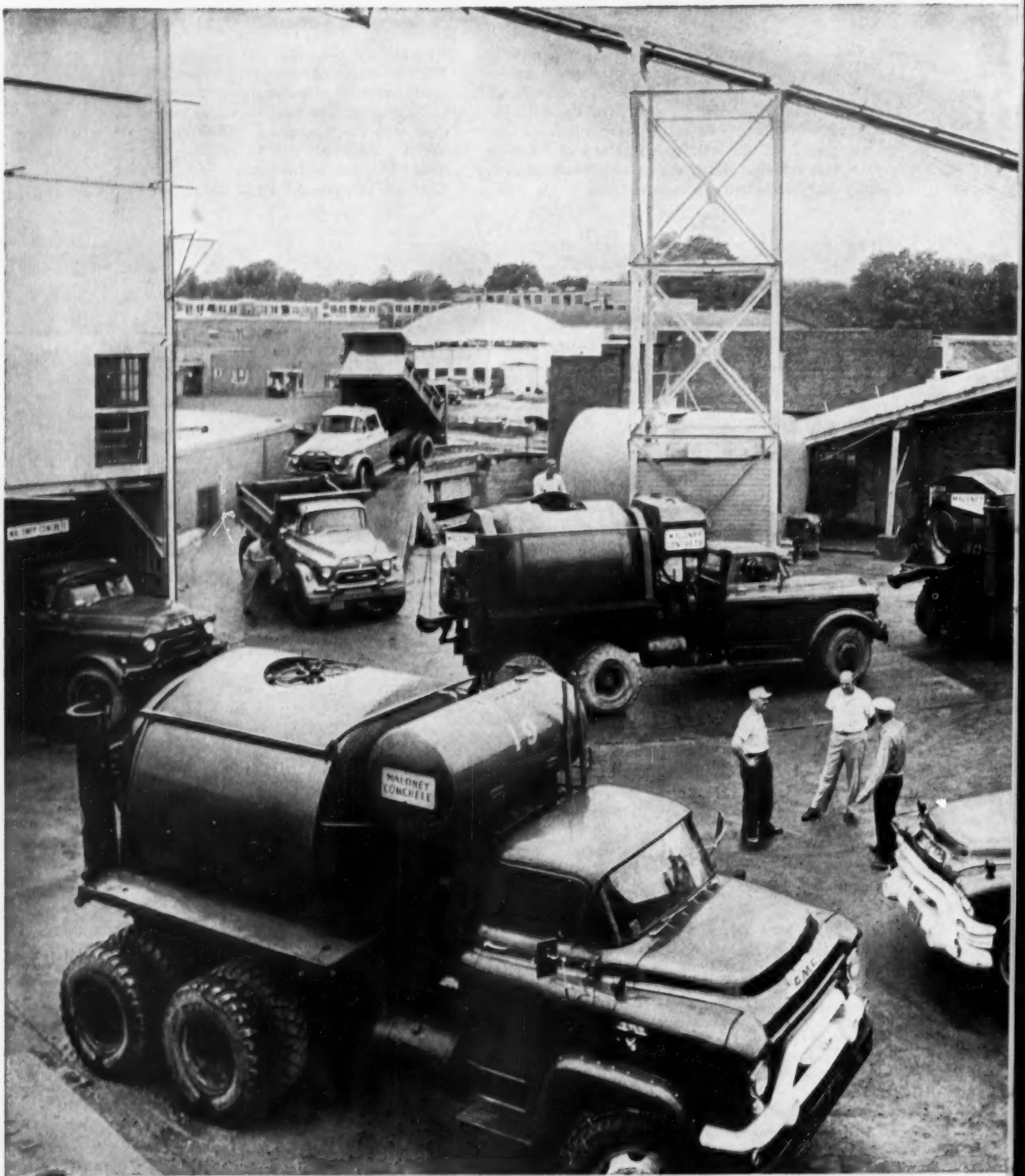
CM-119

SCHIELD Bantam Co.

221 Park Street, Waverly, Iowa

WORLD'S LARGEST PRODUCER OF TRUCK CRANES—EXCAVATORS

These GMC's haul 1½



MALONEY CONCRETE's new GMC tandems – shown here – feature a new *extra-tough*, lightweight construction that lets you deliver 1 to 1½ yards more concrete than conventional trucks. That's typical of the money-making advantages found in GMC Blue Chip construction trucks—all the way up to 63,000 GVW-90,000 GCW.

yards extra—every trip

—that's why Maloney Concrete of Washington, D.C., brought their GMC purchases to 225 with these tandems

IT'S the same thing the country over. Top contractors and builders are putting more and more Blue Chip GMC's to work—for one simple reason: *These trucks do bigger jobs—do them better—and do them faster—yet cut costs to amazing new lows.*

ENGINEERED FOR RUGGED SERVICE

Every GMC construction hauler is designed and built for the toughest operations: Frames are far stronger than need be. Axles are oversize. There's a choice of extra-husky transmissions. And with that extra "muscle," repair needs are far fewer—repair costs far lower.

EXTRA-POWERED, TOO

GMC power is another cost-shrinker—whether you choose a new short-stroke V8—a high-torque Six—or 2-cycle Diesel. Users report exceptional fuel economy—even when you use the new front PTO* to turn the mixer, too. And—according to these owners—everywhere—you can go as much as *double* the usual mileage between overhauls.

EVERY JOB GOES FASTER

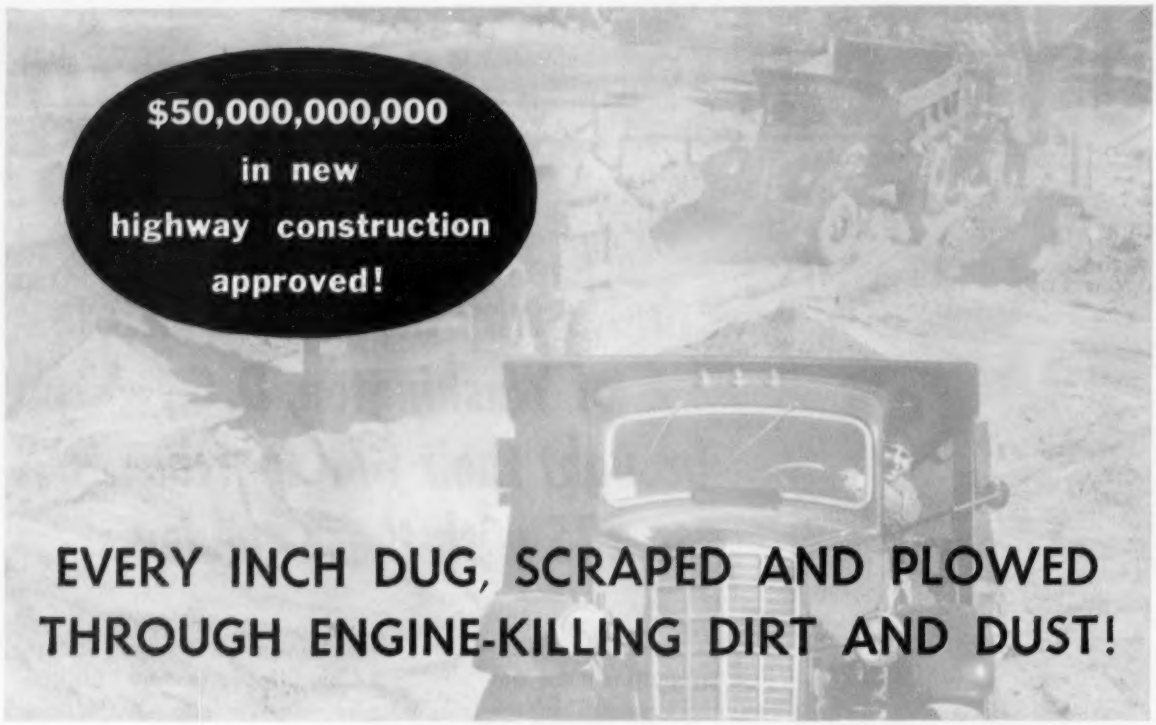
With less shop time, GMC's give you more worktime. Their huge power reserve zooms you up out of the pit faster—shortens trips over the roads. And Safety Power Steering* saves both time and effort—especially in off-the-highway jockeying.

ONE FOR EVERY HAULING JOB

There's a complete range of GMC's in new Blue Chip Money-Maker line. They're the trucks that let contractors shade bids closer—land more business—*and earn bigger profits*—in every kind of construction work. Check *your* particular needs *now*—with your GMC dealer!

**Optional at extra cost*

GMC TRUCK & COACH—*A General Motors Division*



FRAM FILTERS keep your equipment running around the clock

$50,000,000,000 worth of modern expressways—41,000 miles—across every state in the nation will be built during the next five years. To cash in on this bonanza, your equipment must be able to run around the clock, day-in, day-out, year after year!

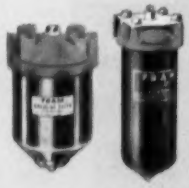
FRAM Filters on all of your equipment—gasoline or diesel—will save you costly shut-downs due to dirt and dust clogged engines. FRAM oil, air and fuel filters keep abrasive dust and dirt, crankcase contaminants and other engine-killers out; add years of useful life.

Prepare now! Many vehicles already have FRAM Filters as standard equipment. There's a FRAM Cartridge individually engineered for every modern engine. So be sure *all* of your equipment is FRAM protected for miles of profitable operation.

FRAM OIL FILTERS
by-pass or full flow proved superior by over 30,000,000 engines across the land.

FRAM AIR FILTERS
99.+% efficient — all air must pass through the filtering medium.

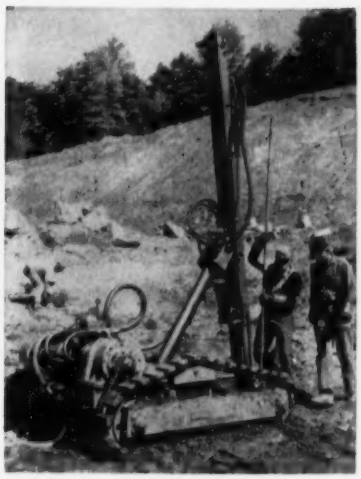
FRAM WATER SEPARATORS
100% water removal from diesel fuel—cut injector maintenance, prolong life.



FRAM FUEL FILTERS
heavy-duty diesel filters stop dirt as small as .000039"—keep your equipment rolling.

FRAM POSITIVE CRANKCASE VENTILATORS
eliminate blow-by gases and fumes resulting from stop and go, slow speed driving.

FRAM Corporation, Providence 16, R. I., Fram Canada Ltd., Stratford, Ontario.



THE LATEST ENTRY in the rapidly expanding crawler-mounted wagon drill field is Worthington's new Blue Brute Port-A-Trac, a self-propelled unit that handles up to a 10-ft chain feed and drifter assembly.

The Port-A-Trac is powered by two 7½-hp Eimco air motors. These are individually controlled so that each track can be stopped or moved forward or in reverse independently. Dead men controls are conveniently located.

The drill featured a hydraulically operated boom for positioning the feed from 5 deg below horizontal to 65 deg above. The boom length is 58 in. Hydraulic positioning is accomplished through a double-acting, hand-operated hydraulic pump equipped with an accumulator.

The drill is 84 in. long and 79 in. wide. It weighs 3,000 lb., and it is powerful enough to pull a 600-cfm compressor up a sizable grade. The track width is 74 in., and each track has 34 replaceable pads on steel shoes.

Worthington also announced the availability of a new Blue Brute tractor-mounted rig for blast hole drilling. This is a self-contained unit that carries its own air supply. It is driven either by the tractor engine or through a cross-mounted portable compressor.

Two hydraulically controlled jibs can operate through an arc of 100 deg, both vertically and horizontally. The boom can be extended to 5 ft, which provides a large drilling area and makes it possible to sink more blast holes from one location without moving the tractor.—**Worthington Corp., Harrison, N.J.**

WHEEL DITCHER—The new model 774 wheel-type ditcher rounds out The Barber-Greene line, which previously included vertical boom and ladder types in a wide range of depths and widths. The new ditcher reaches a maximum of 5½ ft. deep and up to 30 in. wide. It features hydraulically controlled, variable crowding speeds of from 0 to 28 fpm. Many other controls, including hoists, steering controls, and the spoil conveyor, also are hydraulically driven. Overload protection is provided by an electric clutch controlled by a rheostat from the operator's platform that permits instant variation of torque to suit digging conditions. The digging wheel is mounted so that it is independent of the tractor unit. This permits it to move several degrees to either side without the transmission of harmful twist or tilt strains to the digging wheel or the power train.—**Barber-Greene, Aurora, Ill.**

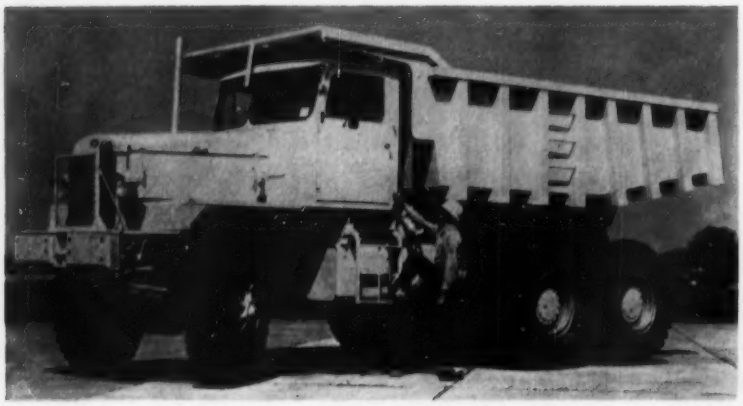
A NEW 40,000-LB rubber-tired tractor features two sets of controls and a revolving driver's seat that permits the operator to maneuver his rig without turning around. To reverse his direction, the operator simply swings his seat around, uses the other set of controls, and drives off in the direction from which he came.

The big four-wheel-drive tractor also features a unique coupling system that permits free oscillation of both axles so that equal weight is maintained on each wheel even when they are operating at varied levels.

Besides having the power and size to doze, push, or pull wagons or scrapers, the big machine can be used as a unique compaction unit: Wagner has designed a set of compaction wheels that are interchangeable with the rubber-tired drive wheels. When used with compaction wheels, the dual-control system that allows the operator to work without turning is an added dividend.

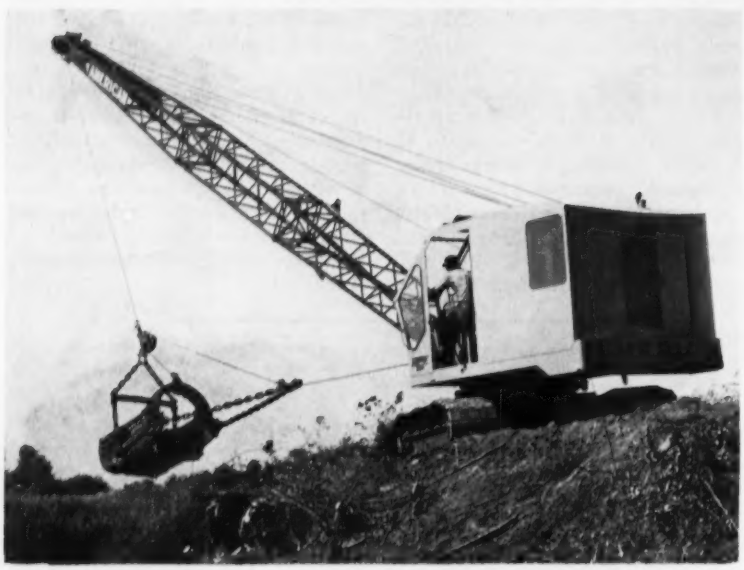
The new tractor is powered with a 200-hp Cummins diesel.—**Wagner Tractor, Inc., 8027 N.E. Killingsworth St., Portland 20, Ore.**

continued on next page



A MASSIVE off-highway dumper powered by a 400-hp diesel power plant featured Mack's Road Show exhibit. The biggest in Mack's extensive line, the four-wheel drive dumper mounts a 24-yd rock body on a rugged heat-treated frame that is electrically fused into a single unit.

The air starting 400-hp diesel engine employs a big air-assisted clutch and a four-speed over-gear transmission coupled with a single-stage torque converter. Hydraulic powered steering is standard.—**Mack Trucks, Inc., 1355 W. Front St., Plainfield, N.J.**



TWO NEW SERIES, covering five rubber and crawler-mounted machines in the ½ and ¾-yd class, have been added to the American Hoist & Derrick Co. line. Model 275, above, has a ¾-yd capacity as a crawler-mounted shovel, and a capacity of 22½-tons as a crane.

Other new models in the new series are the ½-yd crawler-mounted 175, the truck mounted 12½-ton model 175, and the truck mounted 15-ton capacity 195. All can be fitted as shovels, draglines, clamshells, cranes, backhoes, magnet cranes, and pile drivers.

The introduction of the 100 and 200 series extends American's line to cover machines of from ½ to 2-yd bucket capacities, and 12½- to 50-ton lifting capacities. Many design features of the popular American 300 through 700-series machines are incorporated into the new units.

These include a rugged one-piece cast steel carbody with integral roller path, bullgear, and supporting vertical ribs; four improved hook rollers that result in smoother swings and longer roller and roller path life; a power raised or lowered counterweight; and a spacious deck layout that facilitates servicing.

The crawler-mounted 275 shovel is powered by a General Motors diesel that develops 81 hp at 1575 rpm. The multiple strand chain drive transmission is fully enclosed and running in oil. As a crane it can handle an 80-ft boom, plus 15 or 30-ft jibs. As a shovel, boom length is 18 ft and dipper stick length is 14 ft 10 in. Standard crawler bearing length is 10 ft 1 in.—**American Hoist & Derrick Co., St. Paul 1, Minn.**

NEW RUBBER-TIRED TRACTOR, the model D Tournatractor, was developed by **LeTourneau-Westinghouse** to meet the demand for a medium-sized companion to the larger 208-hp Model C.

The new tractor combines big low-pressure tires, top speeds of nearly 20 mph, and a new planetary steering system for increased maneuverability. The new steering system, which permits turns while maintaining full power on all four drive wheels, is said to take better advantage of the power of the tractor when pushing or dozing. It adjust sharpness of turn to forward speed automatically under all conditions.

Other design features include a rugged main frame and easy accessibility of components to speed servicing and maintenance.

The power plant is a four-cylinder, 143-hp diesel teamed with a five speed transmission.—**LeTourneau-Westinghouse Co., Peoria, Ill.**

continued on page 266

It Takes IMAGINATION to Picture 32′ of Water In This DRY HOLE!

Yet that's how it was before a MORETRENCH WELLPOINT SYSTEM was put to work drawing the water down through fine silty sand to a point below subgrade.

Taking full advantage of his freedom to work in the dry, the contractor was able to:

Eliminate sheeting —

Excavate rapidly —

Save time and money in many other ways.

You can do the same! For a head start on every wet job, predrain with MORETRENCH.

Send for illustrated catalog.

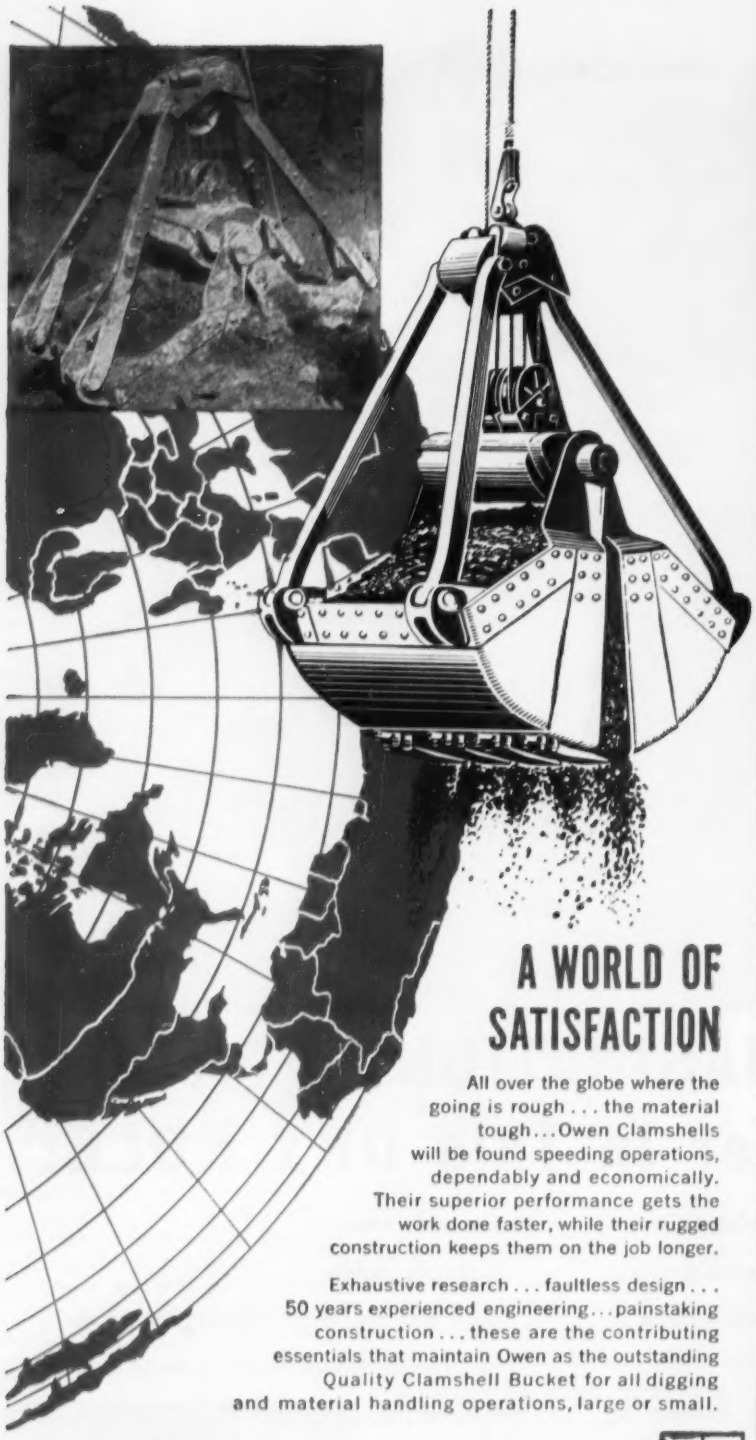
MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro



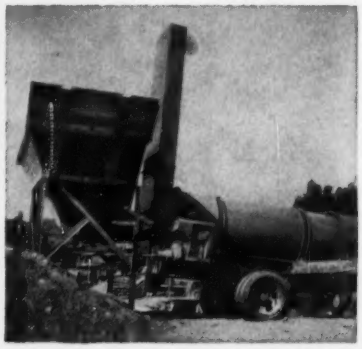
A WORLD OF SATISFACTION

All over the globe where the going is rough . . . the material tough . . . Owen Clamshells will be found speeding operations, dependably and economically. Their superior performance gets the work done faster, while their rugged construction keeps them on the job longer.

Exhaustive research . . . faultless design . . . 50 years experienced engineering . . . painstaking construction . . . these are the contributing essentials that maintain Owen as the outstanding Quality Clamshell Bucket for all digging and material handling operations, large or small.

Write today and get the convincing facts and latest catalog . . . all free upon request.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.



A LOW COST combination dryer-bin unit for producing hot premixed dry aggregate has been developed by Littleford Bros., Inc. Called the portable Trail-O-Dryer and dual feeder bin combination, it will deliver up to 25 tph to Littleford's Trail-O-Patcher, which mixes aggregate and asphalt for discharge directly into trucks.

The Littleford model 25T Trail-O-Dryer has a capacity of 15 tph based on a removal of 5% free moisture when operating at 310 deg F. discharge. It is equipped with a Wisconsin two-cylinder gasoline engine and a low-pressure air atomizing-type burner with a capacity of 7 to 40-gph. The elevator on the dryer has a 10-ft discharge height as standard, but additional sections can be added.

The model 5T25 dual feeder bin has a capacity of 5 tons, which is divided between twin compartments. Separate and adjustable gates permit variable proportioning of two different aggregates. A reciprocating feeder discharges directly into the inlet end of the Trail-O-Dryer, thus eliminating the need for a cold elevator between the bin and the dryer.—**Littleford Bros., Inc., 443 E. Pearl St., Cincinnati 2, Ohio.**

EJECTOR WAGON—A hydraulically controlled ejection trailer that exerts a force of up to 200,000 lb to move its load has been developed by Athey Products Corp. Called the PE21, the new

Cold facts about buying fuels, motor oils and greases

Why Standard Oil can serve you better

Got a construction job in the Midwest or Rocky Mountain states? Bidding on one? Already working a job? Then read how you can get better service and better fuels, lubricating oils and greases

How you get service on the job. In the 15 Midwest and Rocky Mountain states there are more than 3,900 Standard Oil bulk plants. With this many plants none can be more than a few miles from your job no matter where it is. Experienced men work out of these bulk plants to see that you get on-the-spot service. Still more men make deliveries to you. They see that your inventories of petroleum products are maintained day and night. If you work two shifts or even three, they may too.

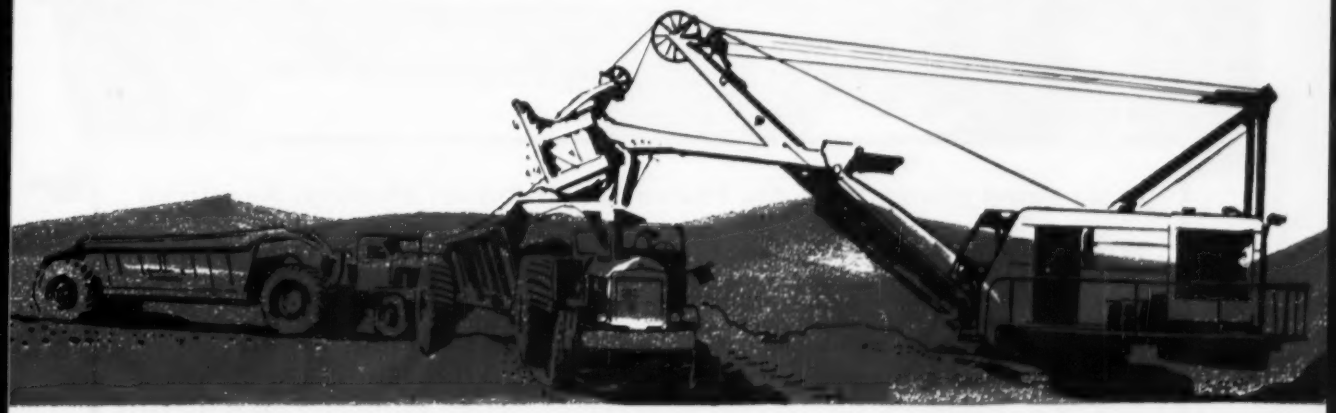
In addition, there are 23 Standard Oil division offices in the 15 states. In each office there is a chief automotive engineer and a staff of automotive lubrication specialists. All of these men are qualified to give technical service. Most of the men have engineering degrees. All have received extensive training in Standard Oil's own Automotive Sales Engineering School. *All of these men are* Standard Oil Company *employees.*

The kind of service you get from STANDARD. Automotive lubrication specialists from Standard division offices will survey your equipment and recommend the fuels, motor oils, greases to use. They will help you set up a preventive maintenance program and suggest lubrication schedules. They will back this up with service from the Standard Oil bulk station so that your equipment is *never* idle for lack of petroleum products. Through them you have a direct line to Standard Oil headquarters and laboratory for additional help at any time you need it.

Why STANDARD OIL products are tops for construction equipment. Standard Oil lubricants, fuels and greases are approved by equipment manufacturers. But there's more to it than just that. Most big equipment manufacturers' plants are right here in the Standard Oil territory. Standard works closely with these manufacturers, knows what's needed of the fuels, motor oils and greases used in construction equipment. Standard Oil fuels, lubricants and greases are used by many manufacturers as drive-away products. All products equal or exceed specifications of the manufacturer. They will stand up to any job you give them with plenty to spare.

Refinery to you, it's all STANDARD. All Standard Oil fuels, lubricants and greases are made by Standard and delivered to you by Standard Oil employees. There's no jobber one place, distributor the next and company operation in the third place. Everywhere you go in the Midwest and Rocky Mountain states there is a *Standard Oil* owned and operated bulk plant within a few miles. You deal with one company. Every Standard Oil supply point is equally and uniformly well run.

How to get in touch. Because Standard Oil lubrication specialists so thoroughly cover their territory, you can depend upon meeting your man at any important contract letting—if you haven't already met him. If you miss him, look in the telephone directory of any town—no matter how small—nearest your job. You'll find the Standard Oil bulk plant listed under the Standard Oil name. If you still miss, sit tight, the Standard Oil man will be around to see you *before* you need him and he will be ready to serve you starting right then. If you would like more information right now, write or call Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



Standard Oil serves these Midwest and Rocky Mountain states

Colorado	Iowa	Minnesota	Nebraska	S. Dakota
Illinois	Kansas	Missouri	N. Dakota	Wisconsin
Indiana	Michigan	Montana	Oklahoma	Wyoming

STANDARD

STANDARD OIL COMPANY (Indiana)

New '57 Fords

New T-750 tandem truck, 37,000-lb. GVW. High Torque 212-hp V-8 engine, 4-barrel carburetor and Master-Guide power steering, standard.

Only Ford Gives You All These Deep-Down Modern Features

NEW Styleside pickup bodies, standard at no extra cost. America's biggest pickup bodies! Built wider with all-steel rugged box-section corner reinforcements and recessed taillights. Side loading's far easier with full-width body.

NEW hydraulic clutch, standard in all models from pickups to tandems. Easier to operate—works like hydraulic brakes. Clutch and brake pedals are suspended type for extra driving ease!

NEW riding comfort! A completely new chassis suspension, roomy cabs with increased visibility, greatly improved riding and handling ease.

NEW power advances! New higher horsepower, new freer breathing, new higher compression, new Super-Filter air cleaner. New advancements from camshafts to carburetors. Modern Short Stroke design in every engine—V-8 or Six.

NEW Driverized cabs—completely new—stronger, roomier, smarter! New wider full-wrap windshield. New inboard cab step, new Hi-Dri ventilation, new easy-to-read instrument panel!

NEW chassis strength! New frames, up to 13% stronger. New sturdier axles! New higher capacity, easier riding springs!

More modern in more ways

...to cut your costs!

NEW F-600 2-tonner has higher horsepower and more rugged chassis construction. More payload capacity than any other 2-tonner.

NEW F-100 pickup with Styleside body, standard at no extra cost. Flareside body with wood floor also available. Both types in either 6½- or 8-foot body lengths.

Boldly modern! That's the *big* news in Ford trucks for '57. Modern styling outside—modern engineering through and through. They're the most *efficient* Fords ever built—engineered to cut your costs.

Look at Ford's new Extra Heavy Duty tandem models. They're at home with any load, anywhere! See the money-saving Medium Duty models . . . the most versatile trucks Ford has ever built. And Ford's new pickup with its smart-looking Styleside body gives you the biggest capacity in the half-ton field—*standard at no extra cost!*

Under the hood of a '57 Ford, you'll find important new advances in power. Engine breathing is freer, more efficient. And every engine—V-8 or Six—offers the cost-cutting benefits of Ford's modern Short Stroke design.

New Driverized Cabs are roomier, more comfortable than ever. And new structural design improvements make these the strongest Ford Cabs ever built.

Deep down it's a rugged truck, too! There's new toughness everywhere—in stronger frames, in sturdier axles, in higher-capacity springs.

One look at these completely new, boldly modern Ford trucks for '57 will make you want to see just what they can do. Contact your Ford Dealer now!

FORD TRUCKS COST LESS

. . . LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Drives six-inch spike into solid concrete —with *Ramset*®

On roofs, on sidewalls, on foundations, workers sink stout fasteners into hard concrete as easily as pulling a trigger . . . and just as fast!

Does a day's work in an hour! On new construction, maintenance, electrical, plumbing or other tough fastenings — do it the easy way, with RAMSET powder-actuated fastening.

Need fasteners in a hurry? There's a RAMSET dealer near you ready to bring them. Call him now (see phone book yellow pages under Tools.)

Get the money-saving facts for your specific job from your RAMSET dealer or write for new catalog now ready.

companion tool

Shure-Set®

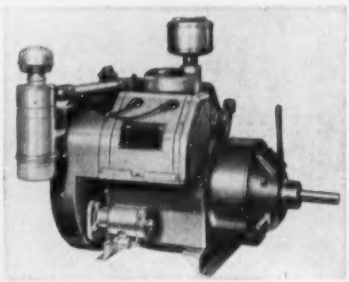
a hammer-in tool that uses no cartridge, but makes your hammer power more effective. For masonry, mortar joints, cinder blocks. Ask for catalog.

Ramset Fastening System

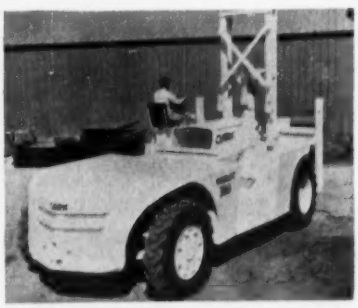
WINCHESTER-WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION

12103-C BEREA ROAD • CLEVELAND 11, OHIO

31-ton capacity rear ejecting trailer is hauled by the Caterpillar DW21 tractor. A tractor-mounted hydraulic pump, operated from the tractor's rear power take-off, furnishes power to the two hydraulic rams that move the ejector plate to the rear. The ejector is carried on precision roller bearings. Ejector guides, rollers, and cylinders are protected from the load and from impact from the loading shovel.—**Athey Products Corp., Chicago, Ill.**



NEW ENGINES—With the introduction of a new four-cylinder engine called the VR4D, the Wisconsin Motor Corp. has now extended its line of heavy-duty air-cooled engines to cover a range of from 3 to 60 hp. The new engine, which produces 60 hp, features high torque characteristics that make it well suited for powering construction machinery. Wisconsin now offers 14 different models, including rugged single and two-cylinder models as well as four-cylinder V-type engines.—**Wisconsin Motor Corp., Milwaukee, Wis.**

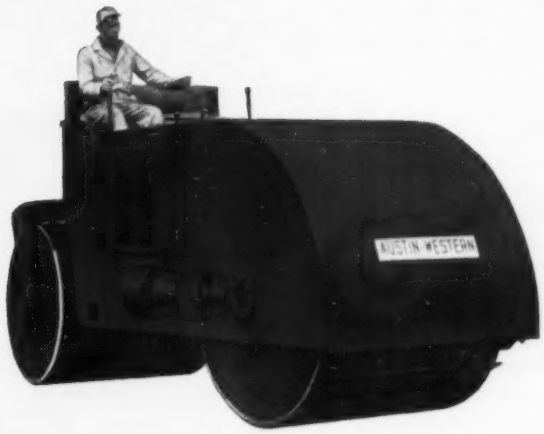


BIG FORK-LIFT—The operator sits above the left front fender and has a clear view of his load on Clark's new 35,000-lb capacity pneumatic tire fork-lift truck. Called the Clarklift Y-350, the truck features a power shifted, four-speed transmission coupled with a torque converter and a 404-cu-in., six-cylinder Hercules gasoline engine. Tire size is 14.00x24.

continued on page 273

THE A-W 3-WHEEL ROLLER

8-11, 10-12, 12-14 ton models. The left drive roll is keyed to the axle shaft; the right turns on heavy duty bushings independent of the left roll and axle. Torque-proportioning-type differential transfers power automatically from a slipping roll to the opposite one, giving traction under almost any conditions.



THE A-W TANDEM ROLLER

5-8, 8-12, 10-14 ton models. Full-width seat and dual controls are standard on all models. Forward and reverse levers are located at each side of the platform, steering lever at center, thus permitting the operator to sit where visibility is best.

Austin-Western also builds a 3½-6 ton Portable Tandem Roller

AUSTIN-WESTERN ROAD ROLLERS

...Engineered for precision operation from power unit to final drive

This new series by America's pioneer manufacturer of motor rollers features smooth, flowing power, carefully balanced weight, and finger-tip hydraulic steering. These advantages mean increased maneuverability and faster, more efficient compaction.

All A-W rollers are powered by your choice of gasoline or diesel engines with 4-speed (regular) or 2-speed (optional) transmissions. Torque converter drives are available. The drum-type front and rear rolls permit sand and water ballast variations in weight up to 4 tons. Here are some typical design and construction features:

- **Oversize axles and antifriction bearings for longer life.**
- **All transmission gears are machine cut and heat treated**
- **Entire transmission is equipped with antifriction bearings**
- **3-wheel rollers have heat-treated alloy steel bull pinions and high strength steel bull gears**
- **Tandem rollers have machine-cut, heat treated final drive bevel gears and pinions**
- **Outside edges of finished rolls are beveled to prevent marks in hot materials**

More than 75% of all parts of the 3-wheel and tandem rollers are interchangeable—an important advantage for the man who owns both kinds. See your nearby Austin-Western distributor. Or write us for complete information.

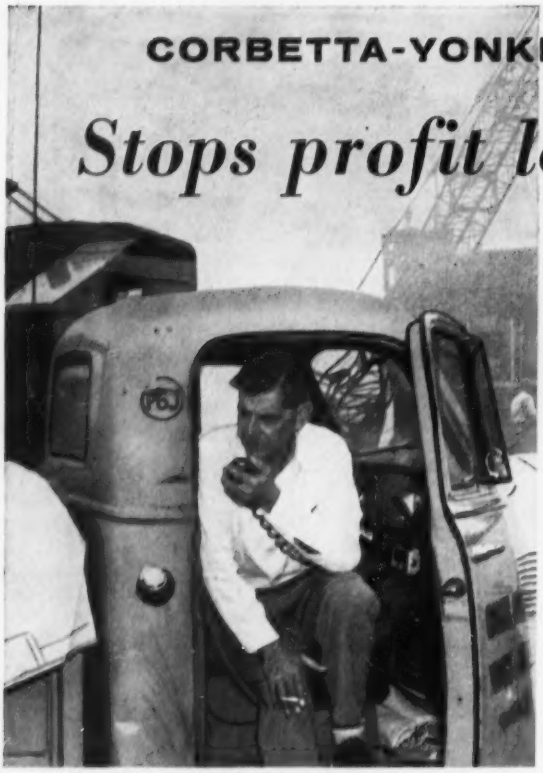
Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON

AUSTIN-WESTERN WORKS
BALDWIN-LIMA-HAMILTON
Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Standard Steel Works • Madsen • Pelton
AURORA, ILLINOIS, U.S.A.

CORBETTA-YONKERS JOINT VENTURE

Stops profit leaks with radio



A Superintendent Should be Everywhere to answer questions and solve problems, but having 2-way radio is the next best thing.

It Costs Money to have a Bulldozer Idle! These mechanics arrived minutes after the breakdown because they were called by radio.

When you've bid on and received the contract for a construction project, every dollar you save goes towards *profits.* That's why the joint venture of Corbetta Construction Co., New York City, and the Yonkers Contracting Co., Yonkers, N.Y., on a three-mile stretch of the New York Thruway, depends so much on its Motorola 2-way radio system.

With about 450 men on the job, using approximately 250 pieces of major equipment to build 8 bridges and miles of retaining walls, as well as the main highway, there are many opportunities to save money with radio.

For example: when a truck, dozer, loader, drag line or shovel breaks down, every minute of delay in getting a crew to fix it costs money for machine and operator, and delays the project. But, with Motorola 2-way radio, it takes only *seconds* for a superintendent to contact a mechanic and have help on the way.

160 Calls per Day reports the base station dispatcher.

Or, if lack of a compressor is holding up an important job, it takes just a few minutes to contact everyone using compressors and find out who can spare one. There may be a question about the location of a utility line. Are the utilities superintendent's drawings up to date? There's no danger of a major mistake when he can pick up his microphone and call field headquarters for the answer.

Planning the next day's work is fast and easy. Just hold a conference over the Motorola radio and save hours of expensive supervisory time. Or when you are pouring concrete. Where is it needed? How much more is wanted? No difficulty getting the answers via radio . . . one man can take care of it.

Just a few of the ways in which Corbetta Yonkers cuts costs, increases profits with Motorola 2-way radio. Learn how you, too, can increase profits on your next job. Write, phone or wire: Motorola Communications & Electronics, Inc., Construction Department.

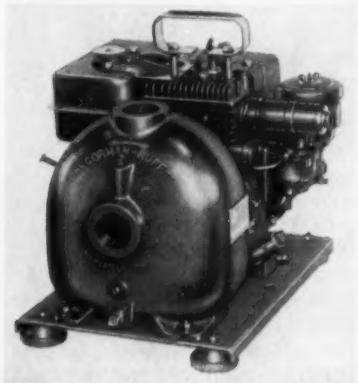
MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs you less—specify Motorola."

The hydraulic system is controlled by a feather-type valve with a built-in adjustable relief valve. Lift speed is 26 fpm when loaded. The truck has an underclearance of 14 in. at the upright. It is 241 in. long and 124¾ in. wide, and the outside turning radius is 231 in. Wheelbase is 155 in., weight is 47,000 lb, and the maximum speed in both forward and reverse is 16 mph.—**Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.**



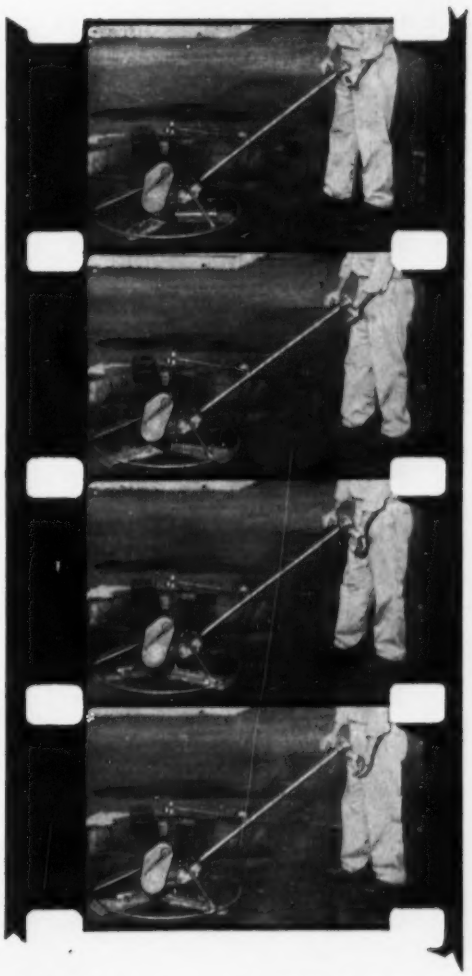
NO CHECK VALVES—A new line of contractors' pumps, called the series 80, has been introduced by Gorman-Rupp. Available with base or wheel mounts in sizes from 1½ to 8 in., the new centrifugal pumps can be driven by engine or motor. The new design eliminates the check valve, a common trouble spot on most pumps. Solids and foreign material are often drawn up with the liquid, and these can foul the valve so that it doesn't seat properly and the pump can not re-prime itself. On the new series 80 pumps liquid enters directly at the eye of the impeller. When the pump is shut off, the absence of a check valve permits in-line liquid to return by gravity from the suction and upper pump sections to the pumping source. For quick priming action, a restrictor device is used on the larger models to control the discharge of in-line liquids.—**The Gorman-Rupp Co., Mansfield, Ohio.**

CUMMINS DIESELS — Huber-Warco has announced the availability of Cummins power plants for its line of 6-D and 7-D-series motor graders. The new models are the 6-D2, powered by a 125-hp JN-6-BI Cummins, and the 7-D2, powered by a 150-hp JBIS-

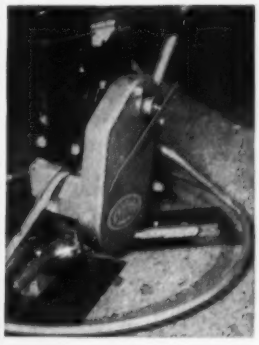
A TROWEL BLADES IN MOTION

B CLUTCH CONTROL ON HANDLE IS RELEASED (NOTICE OPERATOR'S LEFT HAND)

C WITHIN 1/4 TURN, OR 1/6 OF A SECOND, THE BLADES ARE COMPLETELY STOPPED



MOVIE FILM PROVES STOW ROTO-TROWEL STOPS *INSTANTLY!*



Close up of manually actuated clutch control which stops blade rotation within 1/6 second, when handle is released.

Just one of the big reasons why STOW ROTO-TROWELS are your best trowel buy! Within *one-sixth of a second*, Stow's Dead-Man Clutch Control stops the blades, but not the engine! That means Stow Roto-Trowels are SAFER, because the trowel blades stop the very *instant* the lever is released. What's more, this clutch makes the engine easier to start, since full throttle can be used if necessary. Stow Roto-Trowels also feature: fixed, non-rotating guard ring; pitch control on the handle; adjustable handle; lifting hook on the engine.

Available in 24, 29, 34 and 46" trowel diameters, in gas or electric models, Stow Roto-Trowels are built for safety and long life . . . built to produce excellent concrete finishes. For complete information on Stow Roto-Trowels, write for Catalog 560.

STOW

STOW MANUFACTURING CO.

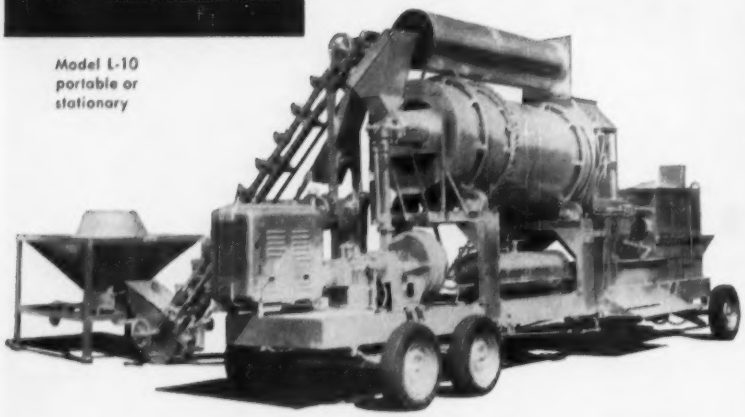
31 SHEAR STREET, BINGHAMTON, N. Y.

White

NEW ASPHALT PLANT

$13,500 (f.o.b. factory)

Model L-10 portable or stationary



20 tons per hour hot mix capacity

Batch type 1000 lb. pug mixer with air-controlled gates. Has built-in asphalt heating kettle, reciprocating plate aggregate feeder. 50 hp engine or 30 hp electric motor. Write for catalog and name of nearest dealer. White Manufacturing Company, Elkhart 6, Indiana.

ONE MAN LOADS . . . ONE MAN OPERATES!

Avoid delays—costly down time and expensive replacement parts with this new low cost "Contractor's Special"

Here's a welder your own men can use for making emergency repairs at a big saving. Weld anywhere independent of power lines. Also mighty profitable on construction and special build-up work. Easy to use, self-starting and ready to go to work on a moment's notice. Eliminates waiting on outside help. Get the facts, mail coupon today. HOBART BROTHERS CO., BOX 637, TROY, OHIO, Phone Federal 2-1223.

HOBART

DO YOUR OWN WELDING

Save hundreds

by doing your own repair and construction work right on the job!

HOBART BROTHERS CO.
Box 637, Troy, Ohio, Ph. FEderal 2-1223

Without obligation, send complete information on the following:

_____ amp. Capacity ☐ "Contractor's Special" ☐ "Husky Boy" Air-Cooled ☐ Arc Welder with 110 v. auxiliary power.

Name_____

Firm_____

Address_____

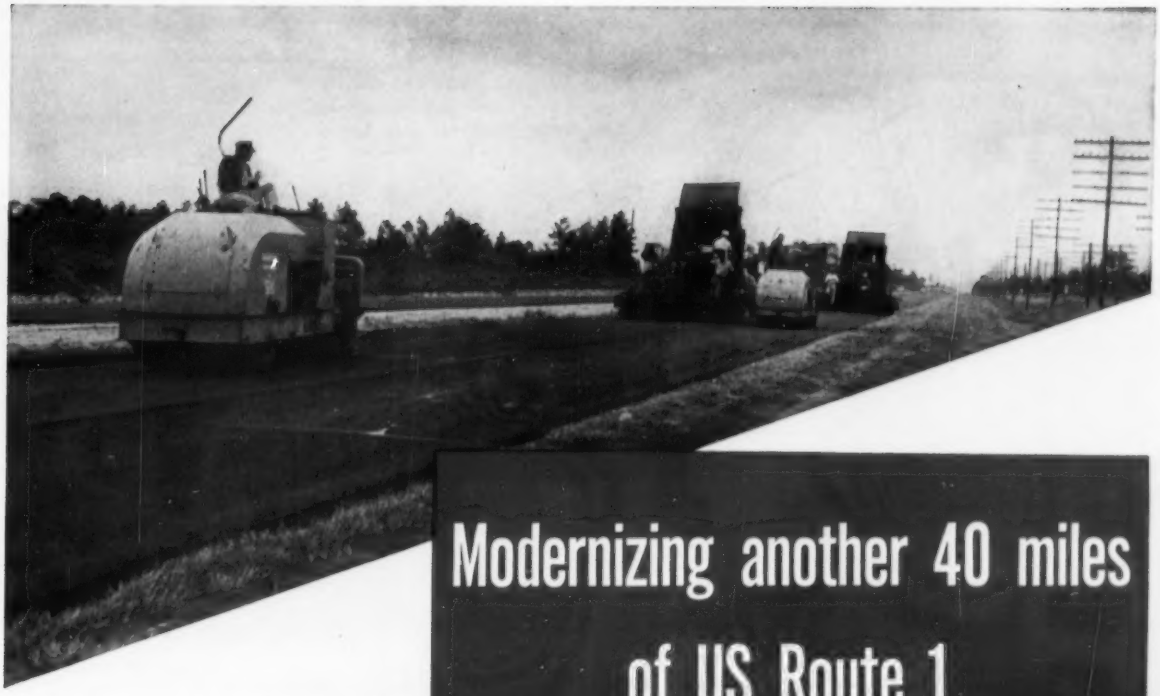
"Big Brother" Air-Cooled

"Husky Boy" Air-Cooled

600 Cummins. Both models have torque converters and full power shift transmissions. Also standard on both grader models is a power sliding moldboard that is operated hydraulically from the cab. It allows an operator to power-shift the moldboard out of the way as he approaches an obstacle, and then to shift it back to its exact former position. The operator can attain a bank-sloping angle up to 90 deg on either side through hydraulic controls. The blade also can be rotated 180 deg through hydraulic controls without removing the scarifier teeth.—**Huber-Warco Co., Marion, Ohio.**

HIDDEN BUT NECESSARY—Although very few Road Show visitors were aware of the fact, one product showed up at over 89% of the 300 manufacturers' booths. The well-hidden but extremely valuable products were Timken bearings. Timken tapered roller bearings, made of alloy steel processed in special Timken electric furnaces, are used by many equipment manufacturers to handle radial or thrust loads wherever wheels and shafts turn. Some of the larger units that employ Timken bearings are the new Cat No. 688 four-wheel-drive tractor, Le-Tourneau-Westinghouse's new off-highway truck, the big Allis-Chalmers HD-21 crawler, and the T-95 International Harvester Payscraper.—**Timken Roller Bearing Co., Canton 6, Ohio.**

FRONT-END PTO — Construction Machinery Co. has now developed a Front-End power take-off for its Transcrete mixers. The PTO is said to provide almost constant drum rpm, because power to the drum drive is taken from the front of the engine where speed is subject only to throttle variations. Power is transmitted from the truck engine crankshaft adapter to a front end sheave shaft. Multiple V sheaves carry power



Modernizing another 40 miles of US Route 1

The conversion of US Route 1 south of Jacksonville into a divided highway has been one of Florida's major, long-range projects. Most recent developments in this progam have been the dualization of 20 miles of US-1 between Jacksonville and St. Augustine and of a similar mileage near Titusville. In both instances, the pavement constructed on these sections of the nation's principal north-south traffic artery was heavy-duty, hot-mix Texaco Asphaltic Concrete.

The same rugged plant-mixed type of Texaco Asphalt pavement has been laid on 30 miles of the new Massachusetts Turnpike. It will also be constructed on a substantial portion of the Connecticut Turnpike.

On the basis of durability, riding quality and cost, hot-mix Texaco Asphaltic Concrete paving is a logical choice for the Interstate Highway System.

Helpful information on Texaco Asphaltic Concrete, as well as other heavy-duty, intermediate and low-cost types of Asphalt construction, is supplied in two booklets, copies of which may be secured with no obligation by writing our nearest office.

ENGINEERING • RESEARCH • EDUCATION
THE ASPHALT INSTITUTE
MEMBER

Photos show hot-mix Texaco Asphaltic Concrete pavement under construction and completed on 20-mile section of US Route 1 between Jacksonville and St. Augustine, Fla., now a divided highway.

CONTRACTORS: Marion Construction Company, Ocala, Fla. (Jacksonville-St. Augustine project); Macasphalt Corporation, Lakeland, Fla. (Titusville project)

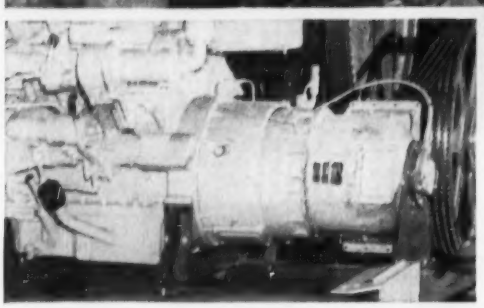
THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17

Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO

TEXACO ASPHALT

Equipped with a Twin Disc Torque Converter, this 2½-yd. Lorain L-85 Shovel is working on heavy highway grading near New Stanton, Pennsylvania, for Lycoming Construction Co., Williamsport.



Inset (left) is a Cat D337 Diesel Engine-Twin Disc Torque Converter combination which is available in the Lorain L-85.

How torque converters *assure* higher dividends from your major equipment investments

Twin Disc Torque Converters, dependably and efficiently transmitting power to your heavy-duty machinery, *assure you a higher return* on your equipment investment, through *more work done in less time* . . . with a *minimum of maintenance and costly downtime.*

Here are five profitable, proved reasons why Twin Disc Torque Converters help you to earn *more* from your other equipment investments . . . such as the Lorain L-85 Shovel pictured above.

1. The torque converter eliminates lugging and stalling . . . permitting engines to work in the maximum efficiency range *all* the time, delivering *constant* high-horsepower output—getting more work done.

2. Experience has proved that *smooth* converter power reduces peak loads throughout the shovel drive train because fluid within the converter absorbs much of the impact energy resulting from a quick drum speed change . . . thus protecting *both* driving and driven equipment.

3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speed, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter. Constant line tension is maintained . . . there is no jerking or snapping.

5. An infinite variety of ratios is available to work with, permitting smooth, accurate control of loads and delicate "inching" or "holding" under power.

Specify a torque converter in *your* next new machine, or when you repower. And investigate the advantages of Twin Disc Torque Converters—both single-stage *and* three-stage—for most other heavy-duty applications from 30 to 1000 hp.

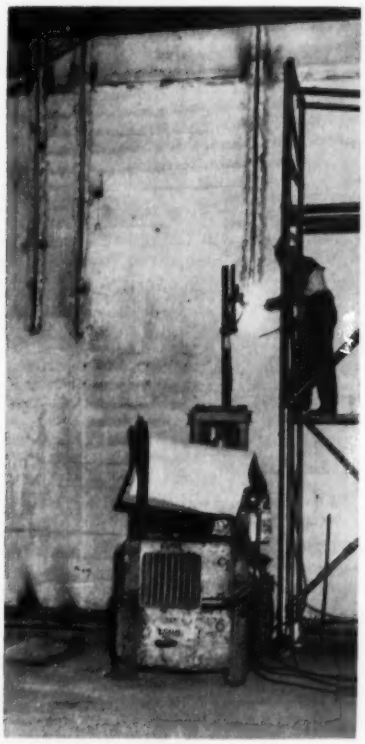
For details, request Bulletin 508 and 135-E (single-stage and three-stage respectively.)

TWIN DISC

TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division), Rockford, Illinois

through five steel core V-belts to the take-off shaft, and CMC's Flexi-Drive power connector transfers it to the drum drive unit. The drive is designed so that it can be easily adapted to a variety of trucks. To make field repairs quick and easy, readily available automotive components are used whenever possible. The new FEPTO Transcrete mixers will be available in 5-yd and larger models. — **Construction Machinery Co., Waterloo, Iowa.**



FLAME CUTTER — Linde Air Products Co. is heralding a newly developed technique that allows flame cutting of concrete with the same type of oxy-acetylene flame used to cut metals. The Linde apparatus is a new torch, which, when combined with a powder cutting method, will slice through thick concrete at high speeds for

Bark River Culvert & Equip. Co., Eau Claire, Wis., cleans equipment and parts with Malsbary 250, finds it delivers much more volume than steam vapor cleaner formerly used.

Here's a chart based on actual time studies from competitive demonstrations of steam vapor cleaners vs. Malsbary HPC (high pressure combination) cleaners. Note the time and dollar savings you can make with HPC.

CLEANING JOB	STEAM VAPOR CLEANER	MALSBARY HPC CLEANER
A-C HD-20 complete, ready to paint	Size: 120 gph. max. 5½ hrs. $12.30	Model 250 2¼ hrs. $7.53
3500 Manitowoc complete, inside and out	Size: 120 gph. max. 40 hrs. $98.40	Model 250 10½ hrs. $35.18
Model HH Payloader	Size: 120 gph. max. 3 hrs. $7.38	Model 250 1½ hrs. $5.03
International TD-24	Size: 180 gph. max. 6 hrs. $17.40	Model 250 2 hrs. 35 min. $9.65

Note: Costs include labor, fuel, cleaning compound, electricity, water, and hose depreciation.

Why HPC Cleans So Much Faster — Malsbary (and only Malsbary) HPC cleaners deliver 240-480 gph. of 325° F. solution at 300-400 psi. This combination of volume and pressure plus solution 100° hotter than any other cleaner, makes the difference. It literally explodes hot solution from the nozzle, softens and blasts away stubborn tars, corrosive grease and dried muck on a time schedule other cleaners can't touch.

Malsbary HPC cleaners also supply wet steam for degassing tanks and for heating use; hot water for removing ice and frozen mud; cold water at 300-400 psi. for rapid removal of dirt and mud where no chemical or heat is needed; warm water for washing and rinsing equipment.

Make this side-by-side test — If you're now using or considering a steam vapor cleaner, ask your Malsbary dealer for a side-by-side competitive demonstration. Let each cleaner do one half of the same rig. You'll quickly see why HPC cleans so much better and faster. Try it — call your Malsbary dealer NOW (see yellow pages of phone directory) ...or write us.

105

MALSBARY MANUFACTURING CO. SINCE 1921

Room C3, 845 92nd Ave., Oakland 3, Calif.

a relatively low cost. In tests, company engineers have pierced a 12-ft thick concrete wall to accommodate an 8-in. pipeline in 1½-hr. They have also cut some 960 linear ft of reinforced concrete wall, varying from 10 to 24 in. thick, at an average speed of 1½-in. per min. The powder cutting method was introduced several years ago as a way of cutting stainless steel. Iron powder is fed into an oxygen cutting flame, and it oxidizes rapidly to greatly increase the flame's temperature. The increased temperature provides cutting speeds fast enough to make flame cutting practical. Depending upon the thickness of the concrete to be cut, Linde's new blowpipe or lance are used. For masonry up to 18 in. thick, the cutting device consists of a blowpipe held in a handle with controls for feeding fuels and also to inject iron powder to the flame. For cuts deeper than 18 in., a lance which can be up to 18 ft long, replaces the blowpipe. Cuts up to 12 ft deep have been made with the lance attachment. Some advantages of power cutting are: the equipment is relatively lightweight and compact; it can be used where jackhammer vibration and blast shock cannot be tolerated; equipment costs are low, and cutting is fast; an operator can use the equipment after 8 or 10 hr of instruction. Its disadvantages are that powder cutting is accompanied by smoke, and that the hot slag produced by the cutting action may create a fire hazard unless shields are used.—**Linde Air Products Co., 30 E. 42nd St., New York 17, N.Y.**

ALL-NEW MASTER TURN-A-TROWEL HAS POWER BLADE ADJUSTMENT

"This sure beats workin' ", said one operator after he'd tried the all-new Master "Powermatic" 34" trowel. "I've never had it so easy in my life . . . or done a better job."

No wonder he likes it. He pushes or pulls a knob and *engine power* tilts the combination blades to float or finish.

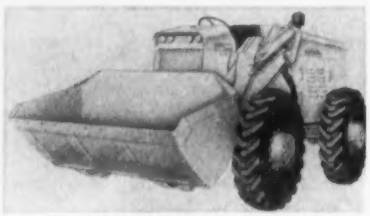
Know what that means? He gets exactly the job he wants, faster and easier.

He doesn't have to "fight" this trowel, either. The Master's only 14" from the slab to the *top* of the engine . . . has the *lowest center of gravity* of any power trowel. Wobble's a thing of the past. And the direct drive puts *all* the engine's power to work.

You'll like the all-new Master, too. The *automatic* clutch that let's the Briggs & Stratton engine get to operating speed before engaging the blades. The "dead man" control that *idles* the engine when you let go the handle. The stationary guard ring. They all make troweling easier and better.

The all-new Master in 34" gasoline-drive is now ready. Three or four blades, whichever you prefer. *Power blade-adjustment, direct drive, lowest center of gravity* and other new features make it your best buy. You'll like it. See it at your distributors or write us for full details.

MASTER MASTER VIBRATOR COMPANY
143 Stanley Avenue, Dayton 1, Ohio



SIMPLIFIED CONTROLS — The TL-20D Tracto-Loader, a four-wheel-drive, 2-yd capacity front-end loader, features one lever power-shift and direction control. The single lever is used to select any of three speeds in either direction and the operator can shift from any forward speed to any reverse speed under full power. The 2-yd bucket can be tipped back 40 deg at ground level. Maximum dumping clearance under the hinge pin is 11 ft 7 in., and reach to the cutting edge at maximum dumping height is 2 ft 9 in. Power for the TL-20D is provided by an Allis-Chalmers' diesel that develops 100 hp at 2000 rpm. It has a 24-v electrical system with an electric starter and an ether dispenser for starting in cold weather. Other features of the machine include power steering, four-wheel power brakes that can be operated with either the right or left foot, and planetary axles as standard equipment. — **Tractomotive Corp., Deerfield, Ill.**

SINGLE-STAGE CONVERTER— The latest Twin Disc torque converter is a single-stage model that will work with high-speed diesel and gasoline engines ranging from 30 hp at 1450 rpm to 212 hp at 3200 rpm. Specific torque ratings of the new 1300 series are 165, 200, 240, 285, and 330-lb-ft, depending on the impeller blade selected by the user. Maximum input torque is 350-lb-ft. The converter features

more power...

plus traction for every footing!

Sock a big loader bucket into a hard-packed pile! Feel the stepped-up power of the new International® 350 Utility tractor! See how a half-ton greater built-in weight knuckles in to give you traction for the big bites. See how big-diameter pneumatic tires provide full-load flotation . . . even on soft dirt or slick concrete.

Back out fully loaded! Let power steering help you turn sharp with a light touch of one hand. Your other hand is free to control the 1,500-pound loaded bucket high overhead. With power steering, you save time on every pass—cut costs every hour.

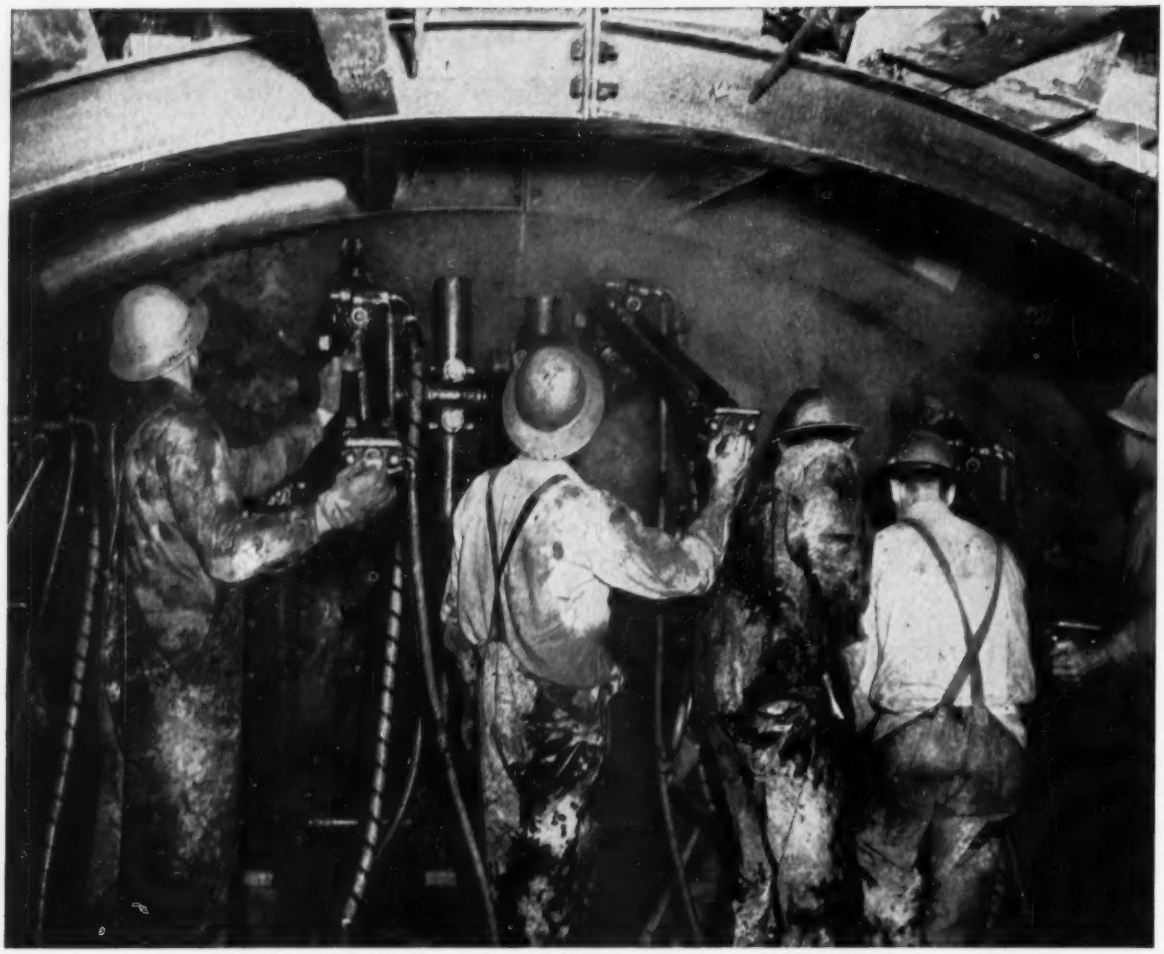
Tough going? Don't shift! Just pull the Torque Amplifier lever to boost pull or push-power up to 45%, *on-the-go.*

So try it! Call your IH dealer for a free demonstration on your job. Give him an opportunity to prove the International 350 Utility gives you extra power teamed with extra weight and stamina to outwork them all!

Faster trenching! You can *feel* the extra down-pressure from 350 Utility built-in weight to make tough digging faster.

SEE YOUR
INTERNATIONAL HARVESTER DEALER

International Harvester products pay for themselves in use—McCormick Farm Equipment, Farmall and International Tractors . . . Motor Trucks . . . Construction Equipment . . . General Office, Chicago 1, Illinois



Bethlehem Hollow is used by Utah Construction Company and Bates and Rogers Construction Corporation in driving Pacific Gas and Electric Company's Poe Tunnel near Oroville, Calif.

They're taking out 700,000 cu yd for tunnel in Feather River Canyon

Using Bethlehem Hollow Drill Steel principally, contractors are moving about 700,000 cu yd for Pacific Gas and Electric Company's Poe Tunnel, near Oroville, Calif. The 6½-mile tunnel, scheduled for completion in 1958, is for the seventh in the company's chain of hydroelectric plants on the North Fork of the Feather River. It will have a diameter of 19 ft in its concreted section, and a 24-ft diameter in the unlined section.

The rock being removed is a meta diorite of a serpentine type. It not only varies from very hard to soft, but has also proved very abrasive. The Bethlehem Hollow Drill Steel, in 1⅛-in. and 1¼-in. diameters, and fitted with carbide-insert bits, was put to use in drifters, where it performed economically in forming blast holes 7 ft deep in the normal round.

Bethlehem Hollow is always a reliable performer because it is rolled from fatigue-resistant steel. It has a uniform, centrally located hole. Besides, Bethlehem Hollow, with its wide quenching range, is easy to heat-treat for the proper balance of toughness and wear-resistance, making possible long-wearing threads and strong shanks.

Order Bethlehem Hollow for your next rock-removal project. It comes in carbon and ultra-alloy grades in rounds, hexagons and quarter-octagons, in lengths of from 18 ft to 27 ft. Longer lengths can be supplied for special applications.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

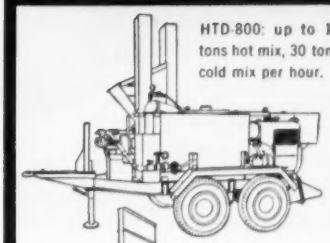
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM HOLLOW DRILL STEEL CARBON AND ULTRA-ALLOY

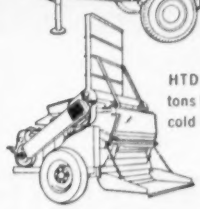
BETHLEHEM STEEL

For Low Cost Paving or Patching

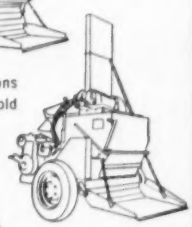
McConnaughay
ASPHALT MIXERS



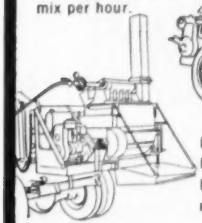
HTD-800: up to 10 tons hot mix, 30 tons cold mix per hour.



HTD-500: up to 7 tons hot mix, 15 tons cold mix per hour.



HTD-B: up to 5 tons hot mix, 10 tons cold mix per hour.

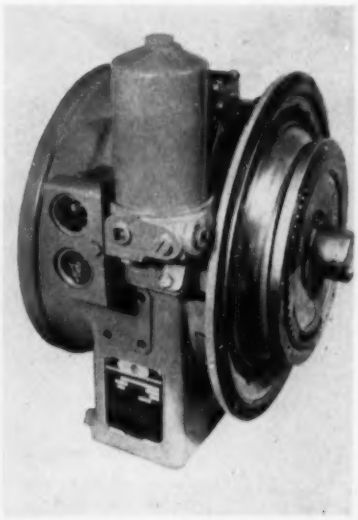


HTD-B TRUCK MOUNT: up to 5 tons hot mix, 10 tons cold mix per hour.

For details and specifications, write, wire or 'phone . .

K. E. McCONNAUGHAY
LAFAYETTE, INDIANA

National distributors: Asphalt Equipment Co., Inc., 3314 Cherry Lane, Fort Wayne, Indiana



"unloading" of the engine through an exclusive blade design that enables the turbine to develop a counter-head that stops fluid circulation at high speed ratios. Another design feature is that impellers with different blades and pitch are interchangeable. Thus, the converter can be matched to engines of various horsepower outputs and speeds, within rated limits, without changing the converter housing or other components. The initial 1300 series model is a spacer type with an SAE No. 2 engine flywheel housing size, and a No. 2 or 3 output housing size.—**Twin Disc Clutch Co., Hydraulic Div., Rockford, Ill.**

BY COMBINING the features of the Rotadrill and the Pneumatractor, Schramm now markets an exceptionally versatile, self-propelled and self-powered heavy-duty drilling rig.

The Pneumatractor, a self-propelled air-compressor that delivers 125 cfm at 100 psi, supplies hydraulic power for the rig and air for cleaning cuttings from the hole. Powered by a 41-hp engine, it has a top travel speed of 12 mph. Tires are 12.00x24, grader-type, on the rear and 7.50x16 on front.

When the drill is in use, three hydraulically controlled outriggers lift the Pneumatractor free of the ground so that tire bounce is entirely eliminated and the machine can be leveled easily. Built-in racks carry and store drill pipe, and when not in use the drill mast can be folded back for over-the-road travel.

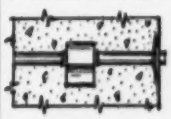
continued on page 285

How to Build Better Walls

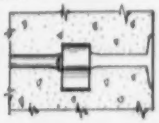
It's easy . . . use Sure-Grip concrete accessories.

When you use Sure-Grip Snap-In form ties, your walls line up better, don't leak at tie points and are easier to point. They look better too, because there aren't any big, loose cone patches staring you in the eye.

Sure-Grip's **patented** Snap-In tie which has special flat pieces or clevises fastened to the rod does the job. These clevises keep the tie from turning and breaking the bond with the concrete. Result . . . no leaking, positive snapping and a lot of time saved. Try Sure-Grip Snap-In form ties on your next job and see how much better they are than other ties or twisted wire.



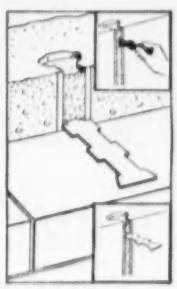
Flat clevises keep tie from turning and breaking bond with concrete. Tie always breaks at proper point.



Special coating on rod between clevises and spreaders prevents bonding to concrete. ½ turn snaps off rod.

Sure-Grip Anchors & Anchor Slot

. . . the surest and fastest way to fasten brick, stone, tile or terra cotta to concrete walls, columns and beams. Just nail the anchor slot to the forms. The **patented** double nailing feature supports the sides of the slot and keeps them from caving in when pouring. You don't have to grind anchors to make them fit. Sure-Grip anchor slot is made from rust resisting material; galvanized steel, Zinaloy, copper, etc., and is available in lengths from 6" to 10' either with or without the slot filler.



We also make a full line of stone, brick and furring anchors for every application.

FREE — Mail the coupon below for our 48 page catalog of concrete accessories and your nearest Sure-Grip dealer's name.

THE DAYTON SURE-GRIP & SHORE CO.
501 Karcher Street Miamisburg, Ohio

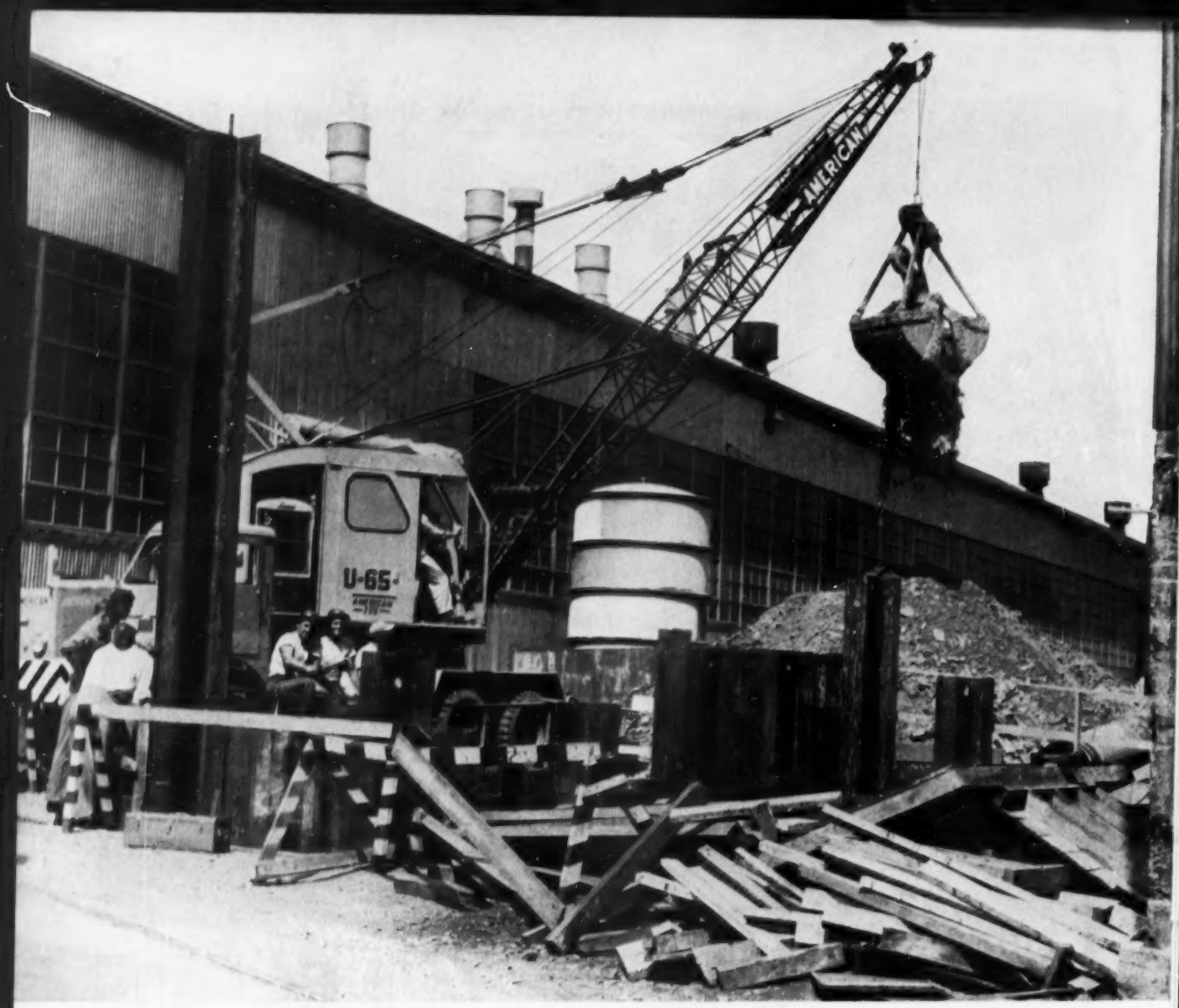
Without obligation, send me your **free** 48 page catalog and the name of my nearest Sure-Grip dealer.

Name_____

Firm_____

Street_____

City_____ State_____



CLAMSHELLING ACCESS SHAFTS in tight quarters is just one of a variety of tough jobs tackled by three American Truck Cranes for Dravo Corporation. The Pittsburgh, Pa., firm is handling all work on a 10 mile section of the multi-million dollar project now under construction for the Allegheny County Sanitary Authority.

5 AMERICAN CRANES DRIVE PILES, EXCAVATE ON 80 MILLION DOLLAR SEWER PROJECT

Two of the country's leading contractors are currently building an 80 million dollar sanitary sewer system in Pennsylvania. It's a 60-mile system of tunnels, access and diversion stations that will tie-in with existing facilities to serve Pittsburgh and 68 adjoining communities. Five American Truck Cranes work for the contractors on this project slated for completion in September, 1958!

Ten miles of tunnels up to 14 feet in diameter will be drilled and blasted through continuous rock by Dravo Corporation. Fifty-seven diversion structures, averaging 20 feet deep are required. Three American 300 Series Truck Cranes are used by this contractor to drive sheet piling for cofferdams and perform general excavation and concrete construction.

B. Perini & Sons, Walsh, Morrison and Kaiser are performing similar operations on a six mile portion of the extensive system. Tunnels 12 feet in diameter range in depth from 30 to 96 feet deep. Perini employs two American 300 Series Truck Cranes for pile driving and excavating access shafts—one 80 feet deep!

With a crane front quickly adaptable for clamshell, dragline or pile driving, or with shovel or backhoe fronts, American Cranes perform multiple jobs over wide areas of this sprawling project. Capacities of this versatile line begin at ½-yard, 12½ and 15 tons!

(Advertisement)

BREAKING GROUND, one of B. Perini & Son's two American 300 Series Truck Cranes begins work on an access shaft. Sheet piling will be driven next, then excavation continued to depth. When jobs require up to 100 feet of boom, 30 feet of jib, and long reaches with capacity loads operators prefer the outstanding stability of American Truck Cranes.

ADJUSTABLE PITCH BUCKET gives American 200 Series Backhoes maximum digging efficiency at every depth within their range. A ¾-yard, 22½ ton capacity machine, the efficient 200 Series is offered as a crawler or truck crane. Get complete facts on the amazing machine that costs less initially, less over the years yet maintains consistently high production rates. See your nearby American Distributor for full information!

SEVENTY-FIVE YEARS of continuous product development highlights this year's Diamond Anniversary at American Hoist! Countless man-hours of engineering have, in these many years, gone into the development of American products. The design and production engineers at American Hoist draw from this tremendous backlog of experience in basic crane development. You benefit with machines that increase production capacities and efficiency while reducing operating and maintenance costs.

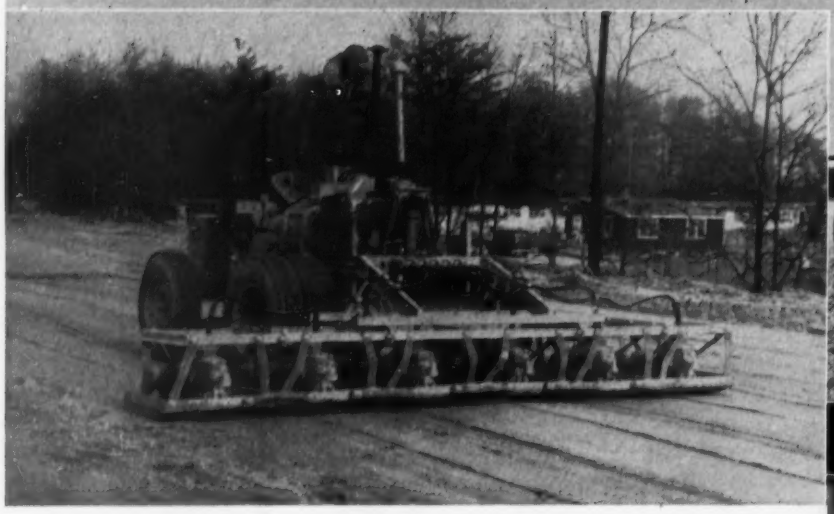
SWINGING LEAD, HAMMER AND PILING into working position is another Dravo Corporation owned American Truck Crane. Used extensively in this contractor's construction of diversion stations, the American cranes demonstrate their versatility by handling pile driving jobs along with excavation duties. A 25-ton capacity machine, job proved for consistent, trouble-free performance, the American is a highly mobile, fast working machine! Owners across the country, working with backhoe, dragline, shovel and crane fronts report consistently lower operating and maintenance cost. Your nearest American Distributor will give you complete specifications for this machine available as a crawler or truck crane. See him for a *complete crane line!*

AMERICAN HOIST

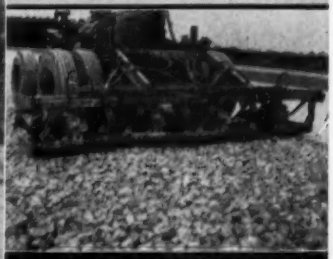
and Derrick Company

St. Paul 1, Minnesota

BASE COURSE DENSIFICATION at its *QUICKEST* and *BEST*



6 COMPACTING UNITS IN WORK-HEAD for maximum productivity in straight-away work. Left: Compacting sand fill in a bridge approach . . . another phase of its wide range utility to paving contractors.



4 COMPACTING UNITS just fit this widening job-change required in only a few minutes.

3 COMPACTING UNITS in tandem and staggered, suits this job ideally — a quick and easy change.

1 COMPACTING UNIT fitted with operating handle and narrow base. Just right for the otherwise unreachable spots.

2 COMPACTING UNITS in twin hook-up — self-propelling. One man readily compacts up to 4000 sq. ft. per hr. in 10" layers.

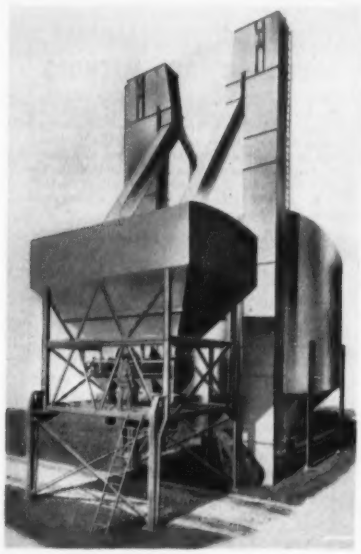
Plus UNMATCHED ON-THE-JOB *ADAPTABILITY!*

For consolidating granular soil sub-bases and the base courses of sand, gravel, rock or slag in waterbound and penetration macadam construction, there is just nothing that compares with the Jackson Vibratory Multiple Compactor. It not only does the straight-away work in only half the time required by equipment of other types, but is so versatile, so easily adaptable on the job that it can be used to great advantage for widening projects of any width and getting into places other equipment can not touch. As may be noted in the illustrations, any number of compacting units may be used in the workhead (up to 6, which covers 13′, 3″) to exactly fit the job at hand. Units may be towed at the side or fitted with operating handles and used as individual, self-propelling compactors. Quickly interchangeable bases from 12″ to 26″ are also available for compacting in trenches, etc.

For compacting granular soil fills of all kinds, the Jackson Multiple Compactor is a terrific cost saver and progress expediter. *It's the predominant medium of consolidation used on the outstanding paving jobs in the country today.* See your Jackson distributor for complete details. We will gladly furnish his name, and literature on request.

JACKSON VIBRATORS, INC. LUDINGTON MICHIGAN

The Rotadrill, which is hydraulically controlled, will drill up to 4½ in. holes with 2⅞-in. O.D. flush tool joint drill pipe. In some formations, depths in excess of 500 ft have been reached. The entire weight of the rear of the unit (10,000 lb) exerts down pressure when drilling. The drill mast is a heavy seamless steel pipe. A 12-ft feed for handling 10½-ft drill joints is standard, but 17 ft of travel can be supplied to handle 15½-ft drill joints. The rotative head, which is powered by a reversible hydraulic motor through a rugged gear box, has a speed of 75 rpm, but it can be throttled down to complete stall and still maintain constant torque. Other output speeds are available. **—Schramm, Inc., West Chester, Pa.**



BATCH PLANT—Butler's new plant has the capacity to batch sand, cement, and two sizes of stone at a rate that keeps pace with four dual-drum pavers working at full speed, according to the company. The complete plant, called the TX4 Road Batching System, consists of three 72-yd aggregate bins and one 60-yd elevated cement bin. Each is equipped with four automatic weighing batchers. Additional cement storage is contained in two 100-yd silo type cement bins equipped with elevators. All controls are electrical. The discharge of the weighing batchers is handled by push button by the truck driver as he passes beneath the plant. The batchers then automatically start

because it fits more jobs...

the Cleveland 92 "Baby Digger" digs more trench . . . in more places . . . at less cost

THAT TREE LAWN is really *narrow* but the compact maneuverable 92 is doing a neat job of digging from driveway to driveway. The operator sets in and lifts out the digging wheel with speed and safety because the 92 gives him full job visibility and fast accurate boom hoist control. Synchronized wheel and conveyor speeds permit precision placement of spoil. No damage to curb, sidewalk or driveways either, thanks to the 92's perfect balance on long, smooth, non-clog crawlers—a real public relations asset.

★ Only 54" wide over crawlers
★ Digs 10" to 20" wide
★ Digs to 5' deep
★ Power-shift conveyor
★ Reversible discharge
★ Digs all soils
★ Digs in any weather
★ Portable, at legal limit speeds

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

Good Everywhere

SMITH

SPRAYERS

"Since 1886"

Replaces unsanitary bucket and dipper. Portable. Push button faucet. Takes cold, clean water to workers right on the job. 5 gal. steel tank is curved to fit the back. Sturdy construction. Highly popular.

SMITH
GARDEN KING
Low-priced power Sprayer
12 gallon capacity

For spraying silicon water repellents for masonry and cement work and many other spraying purposes. Briggs and Stratton Motor. Very high quality.

D. B. SMITH & CO.

"Choice for Quality the World Over"

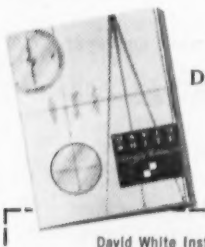
450 Main St., Utica 2, New York

Send for Catalog

Just out!

NEW David White CATALOG

First really new catalog in the instrument field. Contains complete, up-to-the-minute facts about the entire David White line of precision instruments . . . as well as news about some brand new David White products. Fill out the coupon—and mail today.



the sight is right with a DAVID WHITE

D

David White Instrument Company
2501 N. 19th Street
Milwaukee 5, Wisconsin

Please send the 1957 David White Instrument Catalog to:

Name _____

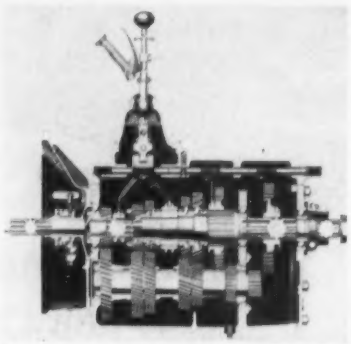
Firm Name _____

Street Address _____

City _____ State _____

EQUIPMENT NEWS . . . continued

the next weighing cycle. An important feature of the system is its portability. Each bin is an all-welded hopper section that can be handled in one piece. They are attached with only four bolts to an intermediate section containing the piped and wired weighing batchers. The attachment of four hinged columns completes the plant assembly. The elevators are handled in two sections, with the chain and buckets remaining in place. Another advantage of the plant is that the contractor can start with a minimum two-batch set-up consisting of three bins. The plant can later be expanded by adding units as the demand arises. **—Butler Bin Co., Waukesha, Wis.**



NEW TRANSMISSION — A new and compact Fuller Roadranger transmission is designed for gasoline engines with up to 400 cu in. of piston displacement. Weighing only 375 lb, and measuring less than 27 in. long, the transmission mounts as a single unit without an auxiliary section. Called the R-35, it provides seven speeds forward and one in reverse through a single lever. Shifts are short and fast. The driver chooses his speeds through progressive and selective steps, with closely spaced and equal ratios through the operating range.**—Fuller Mfg. Co., Transmission Div., Kalamazoo, Mich.**

SELF-PROPELLED ROLLERS— Shovel Supply Co. has introduced two new Ferguson self-propelled rubber-tired rollers—a 9-wheel unit weighing 10 tons, and an 11-wheel model weighing 12 tons.

Features include quickly removable disc wheels, hydraulic steering as standard on both models, and rugged one-piece body construction. The 11-wheel model is equipped with a torque converter

COMPOSITION AND PROPERTIES OF CONCRETE

Just Published

Each of the essential factors in making and using concrete successfully is explained in this book. Helps you insure top economy and efficiency in meeting the engineering requirements for a given type of structure. A reliable reference on concrete technology.

By G. E. Troxell and H. E. Davis, U. of Cal. 434 pp., 161 illus., $7.75

LEGAL CASES FOR CONTRACTORS, ARCHITECTS, AND ENGINEERS

Discusses in clear language 52 important legal problems which may arise on construction projects, such as changes in plans as breach of contract—unreasonable delays by owner—liability for negligent acts. Actual cases are cited. Helps you prevent problems from arising. **By I. Vernon Werbin, Member, N.Y. Bar, and Lic. Prof. Eng. 487 pp., $6.00**

CONSTRUCTION PLANNING, EQUIPMENT, AND METHODS

Shows you how to plan and carry out construction jobs using the best combination of field-tested methods and engineering fundamentals. How to analyze the project, prepare all schedules, and choose and manage the best equipment and methods for any given job is covered in great detail. **By R. L. Peurifoy, A. & M. College of Texas. 533 pp., 385 illus., $8.50**

PATENT NOTES for ENGINEERS

Helps you to better determine what are patentable inventions and how to protect them. Tells nature of statuatory invention, how to keep records important in patent contests, how applications are prepared, filed, and acted upon, what happens in cases of patent interference, etc. Aids inventor in relations with attorneys or employers. By C. D. Tuska, Dir. of Patent Oper., RCA Labs. 198 pp., illus., $4.00.

Announcing—New McGraw-Hill Book Catalog

Just off press—catalog describes over 3000 books, all subjects, to help you advance, solve problems. Send 25c for mailing costs; catalog free. Check below.

SEE THESE BOOKS 10 DAYS FREE

McGraw-Hill Book Co., Dept. CM-3
327 W. 41st St., N.Y.C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Werbin—Legal Cases for Contractors, $6.00
☐ Peurifoy—Const. Planning, Equip., etc., $8.50
☐ Troxell & Davis—Comp. & Prop. of Concrete, $7.75
☐ Tuska—Patent Notes for Engs., $4.00
☐ Send 1957 Catalog. I enclose 25¢

(PRINT)
Name _____
Address _____
City _____ Zone _____ State _____
Company _____
Position _____

For price and terms outside U. S. write McGraw-Hill Int'l., N.Y.C. CM-3

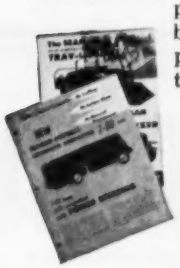
Shoulder to Shoulder—
and on Shoulders, too

SEAMAN-ANDWALL PROVIDES HIGHER DENSITIES AT LOWER BUDGETS

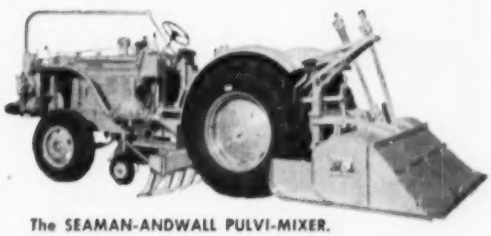
The SEAMAN-ANDWALL Pulvi-Mixer and the Self-Propelled 7-20 Ton Pneumatic Compactor are perfect partners in achieving high density stabilizations. Whether the job be of native soils, soil-cement, bituminous binder or chemical additives the Pulvi-Mixer provides a basic mix that rolls out to the tightest, highest load-bearing, weather resistant base or sub-base. When the Pulvi-Mixer completes its work the mix remains shaped to final grade and crown ready for immediate compaction. No finish blading is needed.

The Pneumatic Compactor . . . Adjustable to any weight between 7 and 20 tons, the Compactor retains the ideal placement and arrangement of coarse and fines which the Pulvi-Mixer established. Because power is applied to the front rolls only presure is "straight down" so there is no displacement of materials, no scuffing and no surface shear.

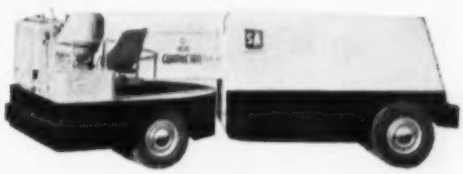
Most maneuverable of all the heavyweights the COMPACTOR turns 180° on a 21 foot road. The operator sits sideways to forward travel, a position in which he has complete visibility of the rolling operation and best control for close-up work. Self-propelled, it is quickly moved from job to job under its own power.



Plan now to make the Pulvi-Mixer and the Compactor your primary, cost-cutting equipment. Send for these two Bulletins completely describing both units. Jot on a postcard "Bulletins TPS and PC" right now and mail it today.



The SEAMAN-ANDWALL PULVI-MIXER.
7 ft. mixing width, gasoline or diesel powered.



The SEAMAN-ANDWALL Self Propelled 7-20 Ton Pneumatic Compactor.

STABILIZING THE WORLD

SEAMAN-ANDWALL CORPORATION

Division of American-Marietta Company

Dept. No. R-210
MILWAUKEE 1, WISCONSIN

You save money

The Gar Wood Dozecaster has the stamina required by Euclid's powerful TC-12. Rugged C-frame resists distortion . . ."deep-anchored" lugs can't bend or smash. Screw-type thrust arms simplify moldboard tilting.

Contractor Lynn Ankrom of Decatur, Illinois, shown above, has dug over 55,000 feet of ditch with his Buckeye 308 with "no major repairs and no downtime to speak of at all!" Dependable production like this is one of the reasons why "Buckeye" has become the most famous name in ditchers.

GAR WOOD

PLANTS IN WAYNE AND

on maintenance when you go Gar Wood-Buckeye

Today's construction proves low input just as important as high output. You can depend on both when you go Gar Wood-Buckeye! With Buckeye ditchers you put in far less time and money on maintenance for the high output these machines deliver. Here's why:

First, Buckeyes are designed to *stand up longer.* Truss-type frame and massive, tractor-type crawlers resist even the heaviest shocks. More anti-friction bearings, fewer moving parts, and oil-bath lubrication of gears add up to long unit life!

Buckeyes also save money by being *easier to maintain.* Unit construction permits servicing without disturbing other components. Major assemblies and parts are interchangeable, cost less, and are readily available. Contact your Gar Wood-Buckeye dealer for additional facts, or write direct to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.

Gar Wood - St. Paul dump bodies and hoists are easy to maintain. Servicing can be carried out by regular mechanics working with ordinary truck tools. "Strong-Arm" hoist design eliminates one-sided dumping strain.

In the Gar Wood 75B, heavy-duty, conical-hook double rollers eliminate pin strain and rocking under load. Massive crawlers are built to take it. Compact design of the machinery deck makes parts easily accessible for servicing.

INDUSTRIES, INC. Wayne, Michigan

YPSILANTI, MICH.; FINDLAY, OHIO; MATTOON, Ill.; RICHMOND, CALIF.

MEMO to Engineers and Contractors . . .

Here are some of the typical advantages Transite Sewer Pipe gives you.

In planning and designing a system

- **high flow capacity** ("n" = 0.010)—permits use of flatter grades or smaller diameter pipe.
- **long life** — corrosion-resistant—durable.
- **tight joints**—cuts infiltration, roots penetration and exfiltration.
- **resilient joints** — absorbs vibration and shock—minimizes effect of earth movement.
- **"all-Transite" line** — Transite Sewer Fittings with Ring-Tite assembly—(plus Transite Building Sewer Pipe).
- **strength** — tough — high crushing strength meets design requirements.

In installing a system

- **light weight**—economical to handle, truck, and lower into trench.
- **long lengths** — easy to line and grade — fewer joints to make — smaller installation crew.
- **packaged joint** — assembly fast, simple, sure . . . even under difficult conditions — no compounds and related equipment.
- **easy-to-assemble fittings** — also with speedy Ring-Tite assembly — no compounds or equipment — all Transite.
- **easily made branch connections, too** — holes for cut-ins quickly done right on job.

Select TRANSITE® for more economical, tighter sewerage systems . . .

Whether a new sewerage system is being planned or additions to an existing one are being made . . . engineer and contractor alike will find a combination of qualities in performance-proved Transite Sewer Pipe that will fit their individual needs. They will find this holds true whether the local conditions call for (a) tight joints to protect against root growth and infiltration of ground water or (b) the strength and flow characteristics that mean definite savings in the design stage, during trenching and installation, and in operation as well.

For further information about Transite Sewer Pipe, write for Booklet TR-165A, Johns-Manville, Box 14, New York 16, N.Y.

Johns-Manville TRANSITE SEWER PIPE

with the RING-TITE® Coupling

and an in-line reverse gear that can be used without throwing out the clutch. Both models can be equipped with water sprinkling tanks and mats.

Because of their low center of gravity, the rollers can be used for rolling shoulders, and work on grades. The 11-wheel model has five 8-in. wide smooth tread tires in the front and six in the rear. The nine-wheel Ferguson roller has four tires of the same size in front and five in the rear.—**Shovel Supply Co., 4900 Hines Blvd., Dallas 1, Texas.**

THE RAT-A-TAT of one of the smallest but noisiest of construction tools—the air hammer—can be reduced to a soft thud with a new Thor attachment that is so simple it's a wonder it hasn't been used before.

The new device is simply a low-cost, zippered jacket that fits snugly over the breaker. Called the Muffle Cover, it effectively reduces the sharp staccato of piston hammer hitting the tappet, as well as most of the exhaust noise.

In addition to serving as a morale booster to harassed operators, it should also be a public relations aid when hammers must be used in residential or hospital areas.—**Thor Power Tool Co., Aurora, Ill.**

BRIDGE DECK SCREED—Stow's recently developed vibrating screed for striking off concrete is light and portable, making it ideal for bridge decks or short sections of highway where it is impractical to use large paving machines. The feature of the screed is a 2½-in. dia vibrator head driven by a 2½-hp gasoline engine at 5,000 vibrations per min. According to Stow, the vibrator will work effectively with steel shod wooden beams up to 30 ft in length. End roller and handle assemblies are attached to each end of the beam by rubber mounts that keep down the amount of vibration transfer to the forms and operators. The end rollers are mounted so that

Dumpcretes on **OHIO** Highways

C. F. Replogle Company used a portable concrete plant set-up and Dumpcretes for fast, flexible handling of 3 widely separated Ohio highway jobs in one season. Paving spread started at Zanesville —moved to Middletown and back to Circleville, Ohio. 123,000 cubic yards of concrete were hauled and placed for over 19 miles of paving with structures.

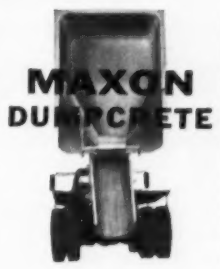
SEND COUPON FOR FIELD REPORT ON THIS JOB & NEW CATALOG

Dumpcretes can reduce:

Capital investment in equipment • Confusion at paving site • Downtime and labor costs • Wide shoulder maintenance.

Dumpcretes can give you:

Lower operating costs • *Flexible* delivery to paving site *and* structures • Closer quality control • Better production.



MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division 8
2600 Far Hills Building, Dayton 9, Ohio

Please send me your new Dumpcrete Catalog.

NAME_____
TITLE_____
FIRM_____
ADDRESS_____
CITY_____ ZONE___ STATE_____

Neenah
FOUNDRY COMPANY

construction castings

of sound quality... solid value

Patterns for
15,000 different Gray Iron Castings for

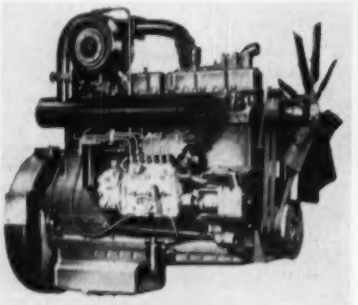
- Highway
- Building
- Communication
- Utilities
- Industrial
- Public Works
- Airport
- Municipal
- Transportation

Write for our 135-page
Catalogue "R," Second Edition

Neenah
FOUNDRY COMPANY
NEENAH, WISCONSIN — CHICAGO OFFICE
5445 North Nova Ave.
Chicago 31, Illinois

EQUIPMENT NEWS . . . continued

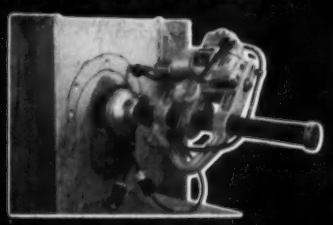
they flip up to support the screed beam off the surface when the operator lifts up on the handle. This makes it easy to push the screed back for a second pass when necessary.—**Stow Mfg. Co., 443 State St., Binghamton, N. Y.**



ROADBUILDING POWER—The Waukesha Motor Co., celebrating its 50th anniversary year, now produces a line of heavy-duty, internal combustion engines suitable for operation on all standard fuels. The line ranges from a 45 hp gasoline engine up to the 12-cylinder model VLRDB, capable of developing over 1100 hp. Gasoline, normally-aspirated diesels, and turbo-supercharged diesels such as the model 148-DKBS, above, make up the Waukesha line. The 148-DKBS is a compact, 779 cu in. displacement diesel capable of delivering 280 hp at 1200 rpm.—**Waukesha Motor Co., Waukesha, Wis.**

NEW TROWEL—Challenge has introduced a powered trowel that performs both floating and troweling operations without changing blades. It features a hydraulically controlled blade adjustment that changes the pitch of the blade instantly. An automatic mercury shut-off switch, that stops the machine in the event of a run-away,

ONLY
MAG-TOOL
HAS
MICROMATIC ADJUSTMENT



MAG-TOOL Drill Presses attach magnetically to ferrous surfaces bringing the capacity of heavy duty presses right to the job!

MICROMATIC ADJUSTMENT enables movement of the drill for precise positioning *after* the press has been attached to the working surface. For example, (see photo) the bit may be easily positioned anywhere between the two curved lines without moving the drill press.
Inquiries invited.

MAGNETIC
TOOL CORPORATION
1955 Lafayette St. Santa Clara, Calif.

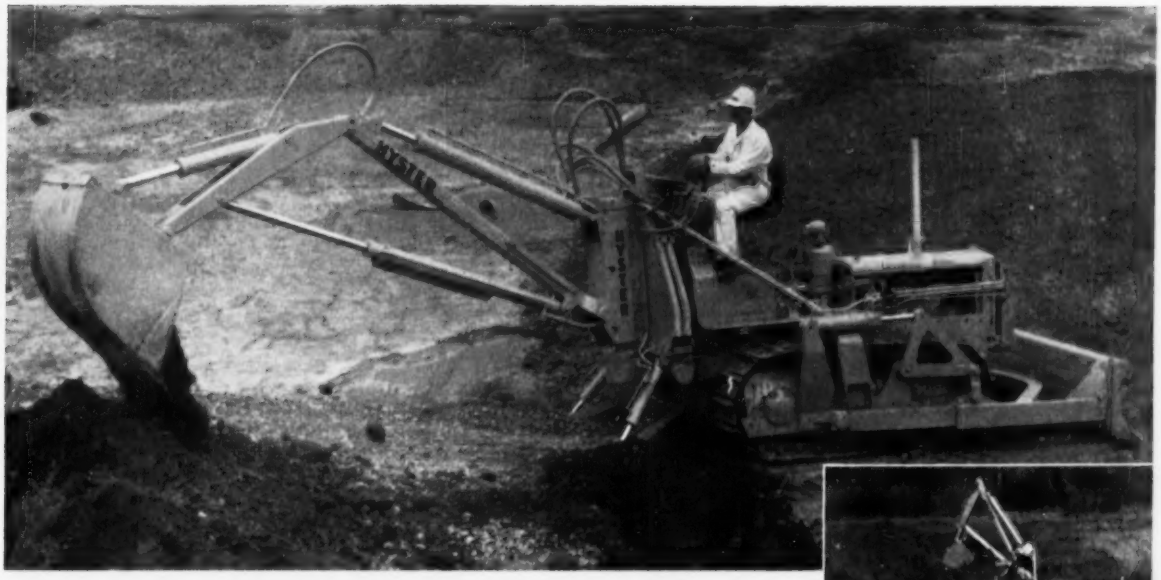
$
INVESTMENT OPPORTUNITY

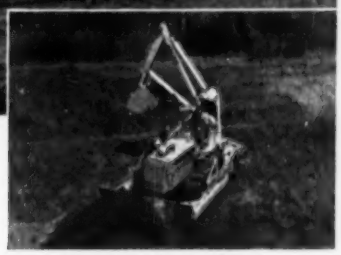
Make your money earn real profits for you by investing in EFCO Steel Forms for your concrete construction. Original cost is low. Lifetime steel faces should never need replacing.

Owners of EFCO Forms are furnished form erection drawings without cost. These forms are adaptable to wide use, including construction of house foundations, and other large and small form requirements. They are easily and quickly assembled, and can be moved economically from job to job.

Although EFCO Steel Forms are available only on a purchase basis, other forms from Economy are available on a rental basis. Write Economy Forms Corporation, H. P. Station, Box 128, Des Moines 13, Iowa, for catalog and full address of office serving your area.

Other offices are in St. Louis, Mo.; Kansas City, Mo.; Lincoln, Nebr.; Minneapolis, Minn.; Ft. Wayne, Ind.; Milwaukee, Wisc.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Metuchen, N. J.; Rochester, N. Y.; Springfield, Mass.; Waltham, Mass.; New York, N. Y.; Washington, D. C.; Decatur, Ga.; Charlotte, N. C.; Dallas, Texas; Tulsa, Okla.; Houston, Texas; Los Angeles, Cal.; Oakland, Cal.; Denver, Colo.





One machine does work of two.

HYSTER ANNOUNCES

the all-new

D4 HYDRAULIC BACKHOE

Designed and engineered to outproduce all other tractor-mounted hoes

COMPARE THESE PERFORMANCE BENEFITS

then see a working demonstration

Designed specifically for Caterpillar-built D4 Tractors.

Develops approximately 4 tons digging force at the teeth and *balanced* by tractor weight to use it all.

Simultaneous swing and hoist at full hydraulic pressures from separate pumps.

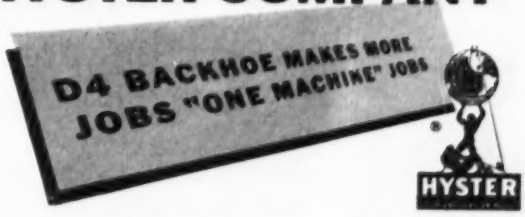
Large hydraulic capacity for continuous, all-day operation without overheating.

Track-type tractor mobility retained by exclusive patented equalizer arrangement.

Hyster's hoe, mounted on a Caterpillar D4 Tractor, will go anywhere to get at the tough jobs. It gives you all the advantages of a combination excavator-bulldozer with full track-type tractor mobility. Handles all kinds of utility trenching and digging jobs at low cost. Everything about this rugged machine is engineered for performance far beyond the capacity of other hydraulic backhoes.

Call your Caterpillar-Hyster® Dealer for demonstration.

HYSTER COMPANY



Caterpillar is a registered Trademark of Caterpillar Tractor Co.

2921 N. E. CLACKAMAS ST.....PORTLAND 8, OREGON
1821 N. ADAMS STREET.....PEORIA 1, ILLINOIS
PORTLAND, OREGON; PEORIA, ILLINOIS; NIJMEGEN, THE NETHERLANDS

TOMORROW'S BUSINESS shapes up differently!

The new SMITH Mixer, available now, is your answer to future profits

The shape of business to come is in clover-leafs, super highways, freeways, expressways, etc. This huge new program means business — for ready-mix operators who can deliver the *right product.*

The new highway jobs specify low slump, "Inspection Type" concrete. To be ready for it, *to assure future profits,* you're going to need the right kind of equipment.

The great new Smith mixers are the answer

The new Smiths are available now — built *especially* for low slump concrete. Featuring the fastest charging and fastest discharging mixer made, they carry up to agitator loads without a door.

Larger discharge opening

New design permits free-flow charging and discharging — even with 0″ slump concrete. And, design of the discharge end eliminates any possible constricting of materials.

★ *Shorter, big diameter drum* means faster free-flow action. Smith T-shaped blades pull aggregates to big diameter section of drum, where they are lifted out of the mass and turned over.

★ *Better weight distribution,* thanks to the shorter unit, means more weight can be shifted to front axle (or a shorter wheel-base truck can be used). You can carry greater legal payloads.

Choice of sizes: 4½, 5½, 6½ yards. Front PTO or separate engine drive.

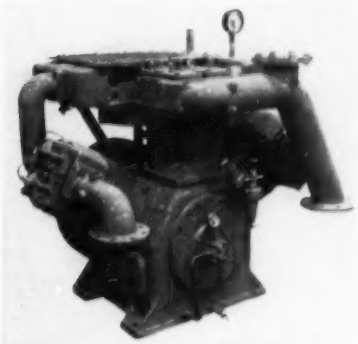
SMITH

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers.

THE T. L. SMITH COMPANY • Milwaukee 1, Wisconsin • Lufkin, Texas

affiliated with Essick Manufacturing Company, Los Angeles, California.

is another feature. Two models are offered in 36 and 48 in. dia sizes. Both are powered by an air cooled gasoline engine, and both have sealed gear boxes. Each has four blades. A ¾-in. ring guard permits the machines to operate to within 1 in. of walls or other obstructions. The guard also serves as a handle for moving the machine from job to job.—**Challenge Mfg. Co., Los Angeles, Cal.**



AIR-COOLED COMPRESSORS — Medium-sized compressors that can be teamed with a Deutz air-cooled diesel engine have been developed by the Swedish affiliate of the U.S. Atlas Copco companies. The new compressors are the 45-hp CT-4, which develops 175 cfm; and the 75-hp CT-6, which delivers 340 cfm. Both models are two-stage, single-acting types that develop their rated capacities at only 970 rpm. The air-cooled units are expected to prove popular on out-of-the-way construction jobs where water for cooling is not readily available. Construction features include annular-type valves and double-row spherical roller bearings in crankshaft journals.—**Compressor Div., Atlas Copco Eastern, Inc., Paterson, N.J.**

continued on page 299

California contractor estimates:

Time and labor costs cut 75% with the Remington Stud Driver

Out on the California coast, "Research House" has taken shape. It's an experimental house sponsored by Associated Architectural Publications and the latest tools have been used to build it—such as the Remington Stud Driver.

Contractor Bert Pickney says, "The Stud Driver cuts time and labor costs around 75% in anchoring beam supports, partition sills and furring to concrete. It took us only half a day to install the sills—a 2-day job with bolts. No pre-drilling is necessary, and sills are set tight! I certainly recommend the Stud Driver to any contractor!"

YOU CAN SPEED ALL STUD FASTENINGS —light, medium and heavy-duty—with the Remington Stud Driver. It sets *both* ¼" and ⅜" diameter studs in steel or concrete—up to 6 studs a minute either size. The tool is cartridge-powered, portable, ready to work *anywhere*. Forty styles and lengths of Remington Studs to choose from. Get full details by mailing coupon.

Remington

DUPONT

STUD DRIVER

Industrial Sales Division, Dept. CME-3
Remington Arms Company, Inc.
Bridgeport 2, Conn.

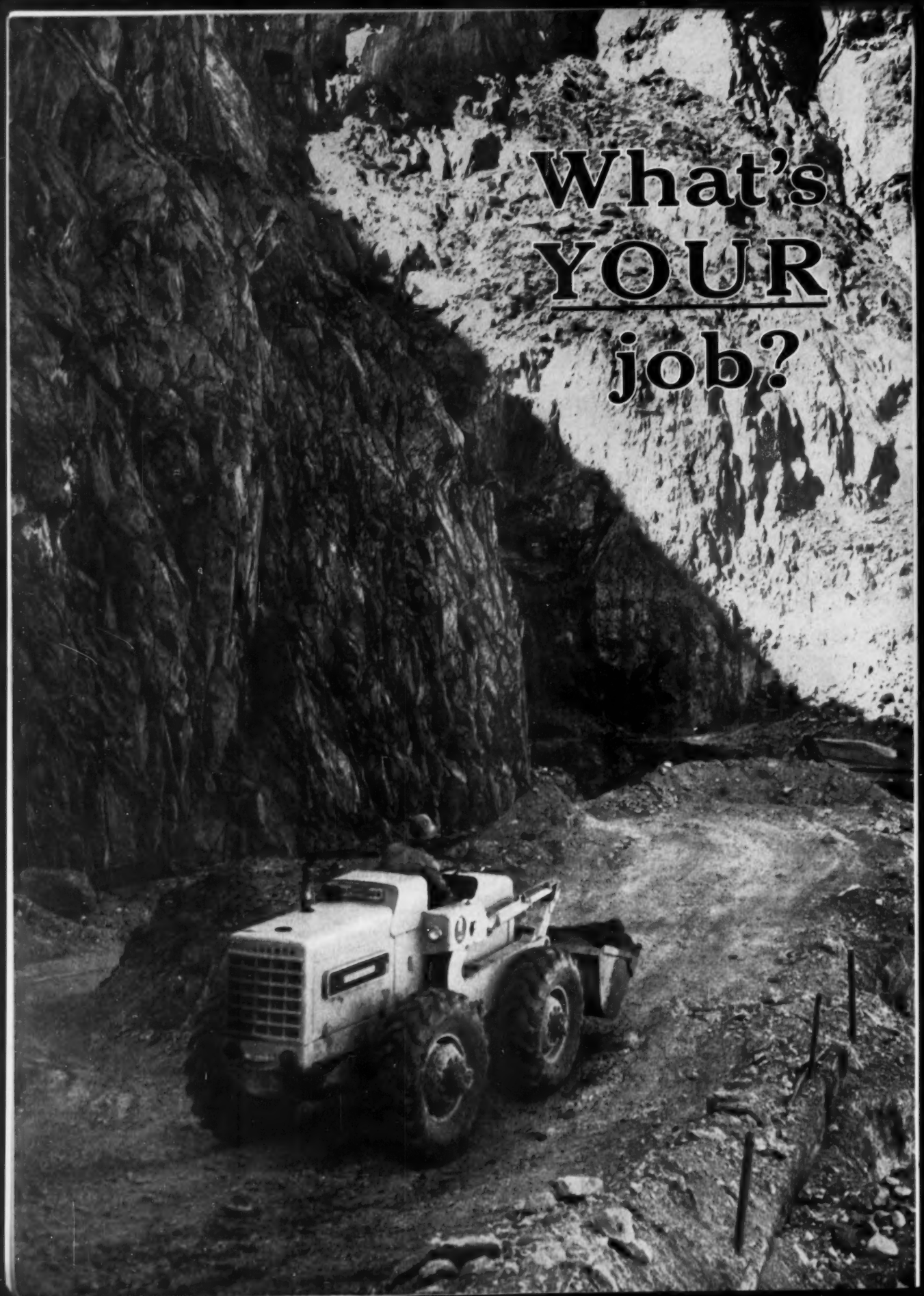
Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____


What's
YOUR
job?

Materials Handling

A "PAYLOADER" is a fast, flexible materials handling unit at gravel pits, ready-mix and hot-mix plants, and on construction sites. It digs and loads bank-run gravel, loads trucks from stockpiles, feeds conveyors, crushers and hoppers — moves quickly to where it is needed from pile to pile for loading operations.

Water, Sewer, Gas . .

Carry and lower pipe into trenches; carry and spread cushion sand or gravel; backfill and level the trench; pull shoring; load out excess dirt. With backhoe attachment, dig trench and service laterals; lower pipe. Travel and work on pavement, over curbs and sidewalks without damage.

. . . Building

Clearing sites, excavating, grading, backfilling walls and abutments, sod stripping, loading excess dirt, spreading top soil, landscaping, handling sand, gravel, crushed stone; unloading, moving and spotting lumber, brick, steel and pipe. With backhoe attachment, digs foundations, footings, service laterals.

Streets–Highways . .

General excavation, leveling, grading, loading trucks . . . backfilling around culverts, retaining walls, footings . . . handling curb and road forms; moving supplies and equipment; scarifying, push-loading scrapers, pulling sheeps-foot rollers, miscellaneous crane work. Moves quickly wherever needed, anywhere on the job.

A PAYLOADER® does more jobs

Whatever type of work you contract, there's a powerful "PAYLOADER" that can handle many jobs profitably. Mounted on rubber, it gets to your job quickly, under its own power . . . and on the job it can handle widely scattered work, longer hauls and a greater variety of assignments than any other type of unit. With a complete line of attachments, a "PAYLOADER" can be kept profitably employed every minute of every day.

In a "PAYLOADER" too you get the most-advanced, most-proven tractor-shovel features from the 4-wheel-drive pioneer and leader in tractor-shovel design and manufacture. You get more-traction, more-yardage and more-versatility features such as exclusive power-transfer differentials, hydraulic load-shock absorber, powerful 40° pry-out break-out bucket action, planetary final drives, power-steer, 4-wheel power-brakes, "no-stop" power-shift transmissions. And *wherever* your job, you'll find a "PAYLOADER" Distributor in the territory equipped and ready to serve you right.

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.

Send data on 4-wheel-drive tractor-shovels as checked:

- ☐ Model HO (2¼ Yd. Payload, 1¾ Yd. Struck)
- ☐ Model HH (1¾ Yd. Payload, 1½ Yd. Struck)
- ☐ Model HU (1½ Yd. Payload, 1 Yd. Struck)

Name _____

Title _____

Company _____

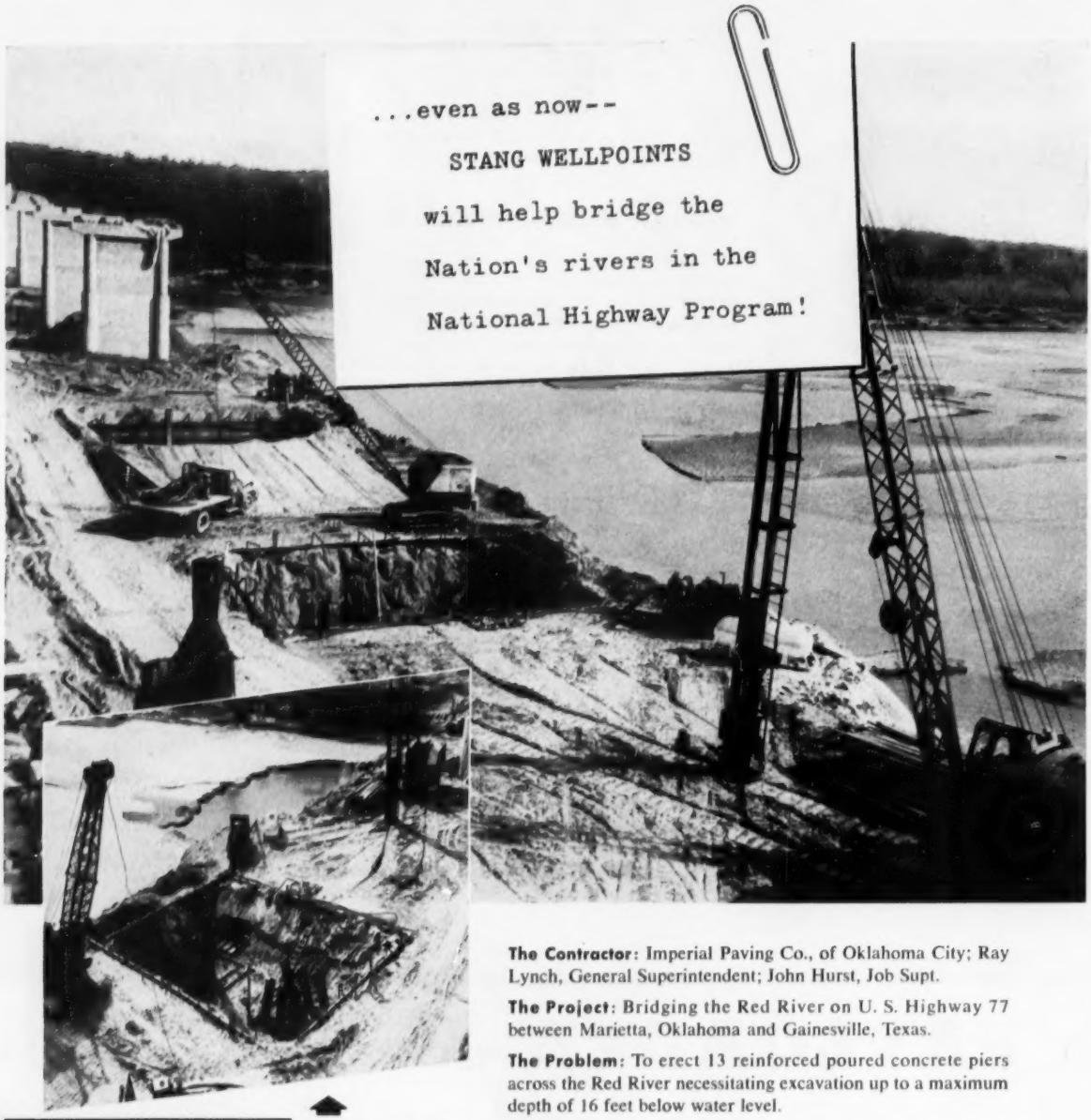
Street _____

City _____

State _____

50

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



The Red River bridge is a joint Texas-Oklahoma project under the direction of the Texas Highway Department, Mr. John G. Simpson, resident engineer.

GENERAL PUMPING including High Pressure Jet Pumps, Large Capacity Sump Pumps (vertical or horizontal), Hydraulicking and Sluicing Systems and Sprinkler Irrigation Equipment.

Write for bulletin 100

The Contractor: Imperial Paving Co., of Oklahoma City; Ray Lynch, General Superintendent; John Hurst, Job Supt.

The Project: Bridging the Red River on U. S. Highway 77 between Marietta, Oklahoma and Gainesville, Texas.

The Problem: To erect 13 reinforced poured concrete piers across the Red River necessitating excavation up to a maximum depth of 16 feet below water level.

The Solution: Installing a Stang Wellpoint system progressively around each pier location on a previously constructed earthen dyke thus lowering the ground water level to the required depth.

Result: A completely dry working area in a water-saturated riverbed making possible a *time-saving and profitable job!*

Call on STANG engineers for experienced services and special equipment to solve your water handling problems—any size, any type, *anywhere!* STANG engineers are on call in your area for consultation day or night.

Putting water in its place

571 ...anyplace!

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems
Dewatering Planning—Equipment—Service

BELL, CALIFORNIA	OMAHA, NEBRASKA	TACOMA, WASHINGTON	TULSA, OKLAHOMA
8221 Atlantic Avenue	2123 South 56th Street	2339 Lincoln Avenue	4026 South Urbana Street
Telephone: LUdlow 2-7421	Telephone: Walnut 7796	Telephone: Broadway 4362	Telephone: Riverside 2-6929

WHEEL DITCHER—Latest in the Gar-Wood-Buckeye line of pipeline and utility ditchers, the model 308 features a hydraulic wheel hoist that gives the operator instant control of the digging wheel at all times. The ditcher is equipped with a hydraulically operated conveyor drive that provides three discharge speeds in either direction. Maximum depth of cut is 5½ ft and the maximum width is 32 in. Separate hydraulic motors allow both the digging wheel and the conveyor drive to operate independently of each other.—**Gar Wood Industries, Inc., Wayne, Michigan.**

THE 2½-YD MODEL 185A, latest model in Thew-Lorain's shovel line, incorporates all of the features developed by Thew for its other recent models. These include Lorain's two-lever Joy-Stick air controls; and the Shear-Ball mounting, which eliminates turntable rollers and center pins and nuts.

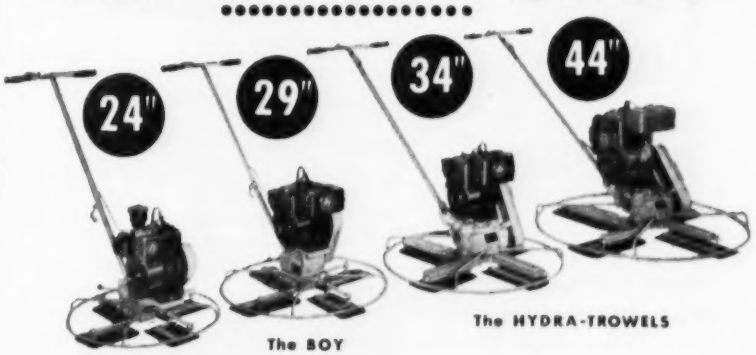
Air control of crawler steering, locking pawls, and the travel jaw clutch is standard, and all friction clutches have built-in air cylinders. Swing, retract, and crowd clutches are all the same size, and they are designed with interchangeable parts.

Two crawlers are available: The K-1 measures 15½-ftx1 ft 10 in., and it has a lifting capacity of 48 tons; the other mounting, called the K-2, is 18½x13-ft and can handle 60 tons. Both crawlers have two speeds in both directions.

Crane booms use Lorain's square-tubular-chord design. On the K-2 crawler mounting, they can be used in lengths up to 200 ft, plus a 40 ft jib. Power for the L85A is provided by a GMC diesel. Torque converter and tailshaft governor are standard equipment. **—The Thew Shovel Co., Lorain, Ohio.**

Kelley POWER TROWELS

for EVERY Job!



The BANTAM The BOY The HYDRA-TROWELS

LOOK! ONE HAND!
Low center of gravity makes Kelley trowels stable, easy to operate. No pulling or tugging. No gyrating. You never have to "fight" a Kelley machine.

LOOK! ONE HAND!
Imagine...down a ladder with one hand! That's what you can do with the light, easy-to-carry BOY and BANTAM. So compact you can put it in the trunk of your car.

Here's the BIG, NEW Kelley line, the best power trowels on the market! For the big jobs...two easy-operating HYDRA-TROWELS, 34" and 44", with the exclusive Kelley hydraulic action. A flick of the finger on the control lever sets the 4 dual-purpose blades for floating or finishing any type of floor finish desired. For the smaller jobs...the Kelley BANTAM, 24", and the Kelley BOY, 29". Small for portability and bears for work!

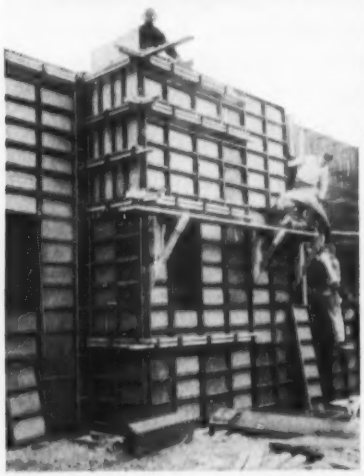
Kelley machines are unmatched for their easy operation. Low center of gravity assures stability, prevents gyrating. All Kelley machines have 4 big, dual-purpose blades for both floating and finishing. Stationary guard ring works right next to walls and makes carrying easy. But above all, Kelley machines put quality, hand-troweled finishes on your floors without back-breaking drudgery.

Kelley MACHINE DIVISION, Wiesner-Rapp Co., Inc.
283 HINMAN AVE., BUFFALO 23, N. Y.
Please send me information on the
☐ HYDRA-TROWELS ☐ BANTAM ☐ BOY
NAME _____
STREET _____
CITY _____ ZONE _____ STATE _____

Get Cash Guarantee of Savings on Concrete Forming

Atlas Compo Forms are the simplest, easiest and surest to use: are *guaranteed in writing* to save 5¢ to 20¢ per square foot on most jobs over other forming.

ATLAS COMPO FORMS



Save money on your next forming job. Contact our local office for full details.

IRVINGTON
FORM & TANK CORPORATION
20 Vesey Street
New York 7, N. Y.

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

DEERE LINE—The line of John Deere industrial tractors and their many attachments are described and illustrated in a new 32-p catalog. In addition to illustrating the amazing variety of jobs the small crawler and wheel tractors can perform, the booklet describes the five new attachments recently introduced: the direction reverser, a heavy-duty three-point hitch, a foot throttle, a new five-speed transmission, and a continuous-running power take-off.—**John Deere Industrial Div., Moline, Ill.**

FIELD STUDIES—A new folder released by Malsbary contains field reports and photos that show how maintenance shops use Malsbary HPC (high pressure combination) units to clean construction equipment.—**Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.**

DUMPCRETE INFO—The Dumpcrete non-agitating concrete body recently has been redesigned to increase its capacity and to give it added flexibility. A new catalog describes how the new model can handle up to 4 yd when mounted on a single-axle truck, and up to 6 yd when mounted on tandem axles. —**Maxon Construction Co., 2600 Far Hills Ave., Dayton, Ohio**

SURVEYING TOOLS—The David White Instrument Co. has produced a new four-color catalog that contains information and specifications covering the company's entire line of precision surveying instruments.—**David White Instrument Co., 2501 N. 19th St., Milwaukee, Wis.**

CONVEYOR FILM—"Standardization for the Long Haul," a new documentary film on belt conveyors of all types used for major construction and for aggregate production has been produced by Barber-Greene. The film, which runs for approximately one-half hour, has sound and is in color. Along the major projects portrayed

FAST, LOW-COST WAY TO INSTALL PIPE . . .

push it under streets, roads, tracks, lawns with a timesaving

GREENLEE HYDRAULIC PUSHER

Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.

Two feet per minute average pushing time

GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

GREENLEE

GREENLEE TOOL CO.
2183 Columbia Avenue • Rockford, Illinois

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.

Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48" ram travel.

JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

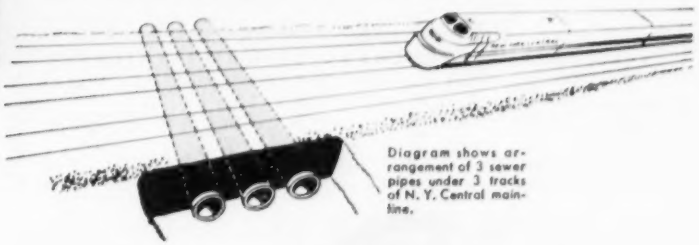


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

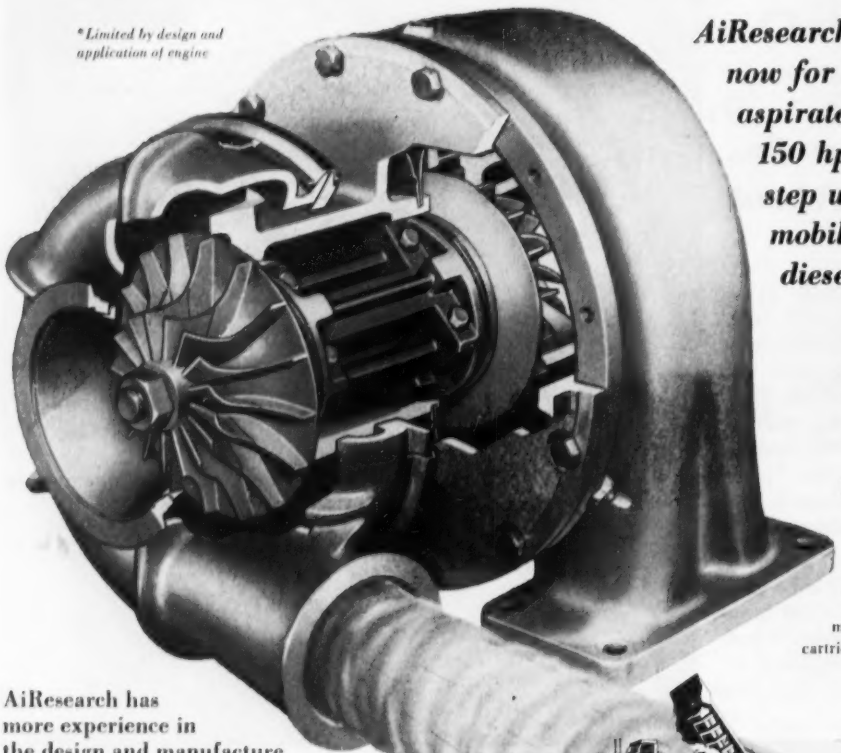
If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

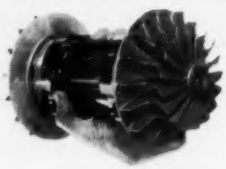
7403 Walker St. • Minneapolis 26, Minnesota

AiResearch Turbochargers improve diesel engine performance up to 100%*

**Limited by design and application of engine*



AiResearch units are available now for use with normally aspirated diesel engines of 150 hp and up. They step up performance of both mobile and stationary diesels, land or marine.

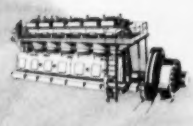


Removable cartridge simplifies repair and overhaul

This cartridge contains the turbocharger's rotating assembly, bearings and seals in a factory balanced package. It can be replaced in minutes with another factory balanced cartridge by a mechanic on the scene.

AiResearch has more experience in the design and manufacture of small turbomachinery than any other company. AiResearch turbochargers are the most efficient and safest units of their kind. New additions to the AiResearch family of turbochargers have widened their range of application in the diesel engine industry.

Our engineers welcome the opportunity to work with you in improving the performance of your diesel engines. We are happy to confer on applications of the turbocharger principle to your power plants.



AIRESEARCH TURBOCHARGERS NOW AVAILABLE

MODEL	T-10	T-15	T-16	T-30
Diameter — in. nom.	9	15¼	11½	15¼
Length — in.	9	16¾	15¾	17¼
Weight — lb.	39	125	100	135
Output — lb/min. (Standard Conditions)	25-40	35-65	45-65	70-95

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

NEW PUBLICATIONS . . .
continued

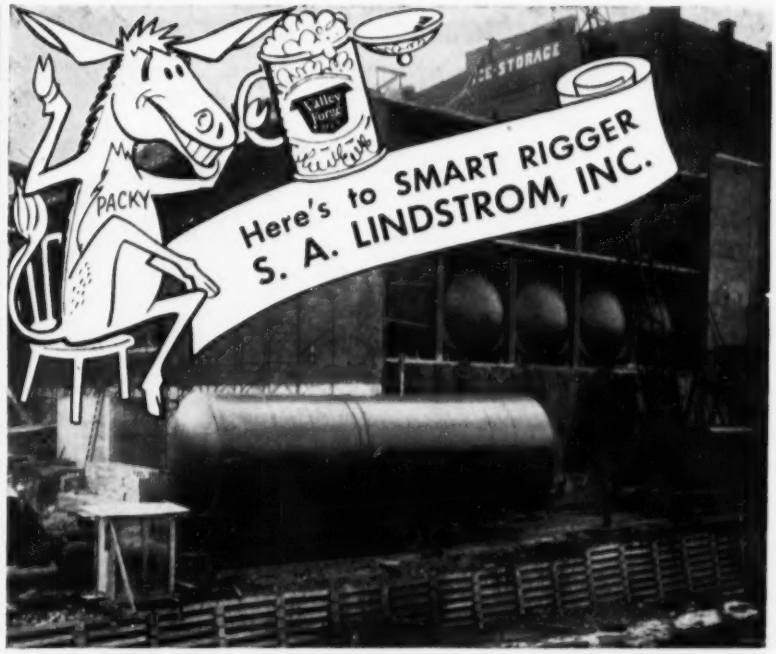
in the film are aggregate production and concrete handling at Folsom Dam, the Barnhart Island power plant of the St. Lawrence Seaway project, Oahe Dam, and Chicago's big underground parking lot development. Other portions of the film describe several major commercial aggregate and ready-mix installations throughout the country.—**Barber-Greene Co., Aurora, Ill.**

A-C INFORMATION—Three new pieces of literature describe the HD-11G and HD-6G crawler tractor shovels and the four pull-type scrapers in the Allis-Chalmers line. The tractor shovel booklets give specifications and design highlights as well as descriptions of the matched attachments designed specifically for each model. The pull-type scraper booklet also gives design details and includes several action shots of each unit.—**Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee, Wis.**

WELDING DATA—A new 24-p. "Electrode Data Book" has been prepared by National Cylinder Gas Co. Included is information on AWS-ASTM arc welding electrode specifications, data on how to estimate electrode consumption, a summary of welding symbols, and factors to consider when selecting electrodes.—**National Cylinder Gas Co., 840 N. Michigan Ave., Chicago, Ill.**

TRACTOR SHOVEL GUIDE—Caterpillar's new four-color booklet describes in simple terms how to get the most work out of Traxcavators with the least amount of effort. Called the "Traxcavator Operator's Guide," the booklet uses drawings to illustrate each phase of the operating cycle in detail. It also covers typical loader applications such as basement excavation, loading, back filling, clean-up work, grading, spreading, and transporting concrete. The guide also illustrates the use of attachments for the Traxcavator.—**Caterpillar Tractor Co., Peoria, Ill.**

CHOOSING WIRE ROPE—A new Macwhyte brochure uses photographs and drawings with reeving diagrams to list proper wire rope specifications for all types of construction equipment. Called "The Correct Wire Rope for Contractors'



and his **ROGERS TRAILER**

Construction of the new buildings at The Adam Scheidt Brewing Co., in Norristown, Pa., included the pigeonholing of 30 steel tanks in the 3 story storage and fermentation cellar.

Problem: To move the 18 ton, 45 foot long, 12 foot diameter glass lined steel brewing tanks on a 30 foot Rogers Trailer.

Ingenious Solution: Two 45 foot I-beams bolted to the trailer bed. Cross-bracing beams formed a cradle for the tanks which were held securely by wire loops during the move. With this clever arrangement, the trailer's two rear axles fell almost exactly under the center of the tank. This made for better balance, smoother riding and easier handling.

ROGERS
LOW BED — HEAVY DUTY
TRAILERS
ROGERS BROS. CORP. ALBION, PENNA.
Export Office: 50 CHURCH ST., NEW YORK 7, N.Y., U.S.A. *Cable Address:* Brosites

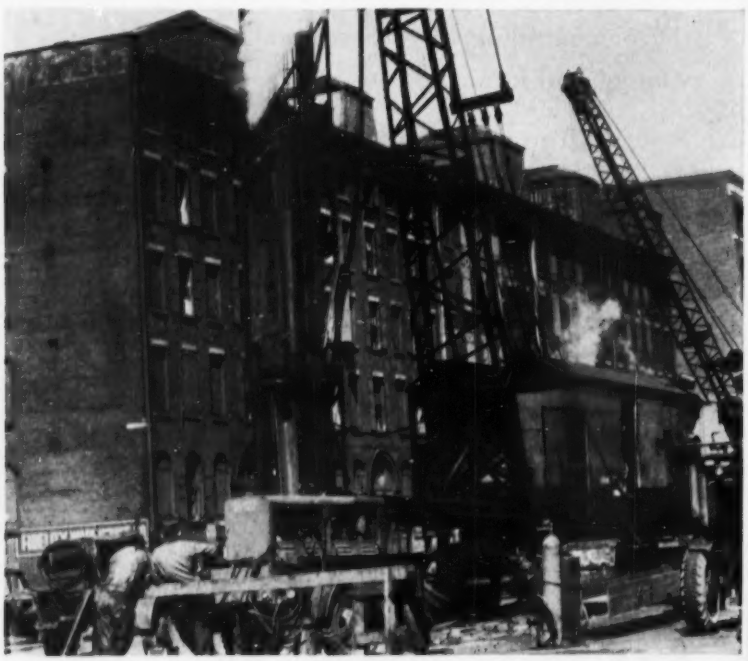
For better performance and longer service get protective maintenance done *On time!*

Hobbs ENGINE HOUR METERS
TAKE AWAY THE GUESSWORK

Beat down-time through timely maintenance . . . know WHEN lubrication, oil change, overhaul, etc., are due. Today's engineers recommend maintenance in terms of operating time instead of distance . . . the Hobbs Engine Hour Meter provides that information. Not a revolution counter, but a true electric timing instrument recording HOURS and MINUTES. Ruggedly built . . . simple to install . . . easy to read. For both gasoline and diesel engines. Approved and recommended by leading manufacturers. **See your factory branch, representative, distributor . . . or WRITE:**

JOHN W. Hobbs CORPORATION
A DIVISION OF STEWART WARNER
2070 YALE BLVD. SPRINGFIELD, ILLINOIS

(Advertisement)



A busy New York City street was treated to the sight of huge 12-ton pile hammers pounding away at 1,600 H-beam piles into "made" ground to provide foundations for the South Street Elevated Highway. The piles varied in length from 35 ft to more than 200 ft and the contractor, Fehlhaber Corporation, used S10 Single-Acting Pile Hammers, manufactured by McKiernan-Terry Corporation, 110A Richards Ave., Dover, New Jersey, to do the work.

NEW PUBLICATIONS . . .
Continued

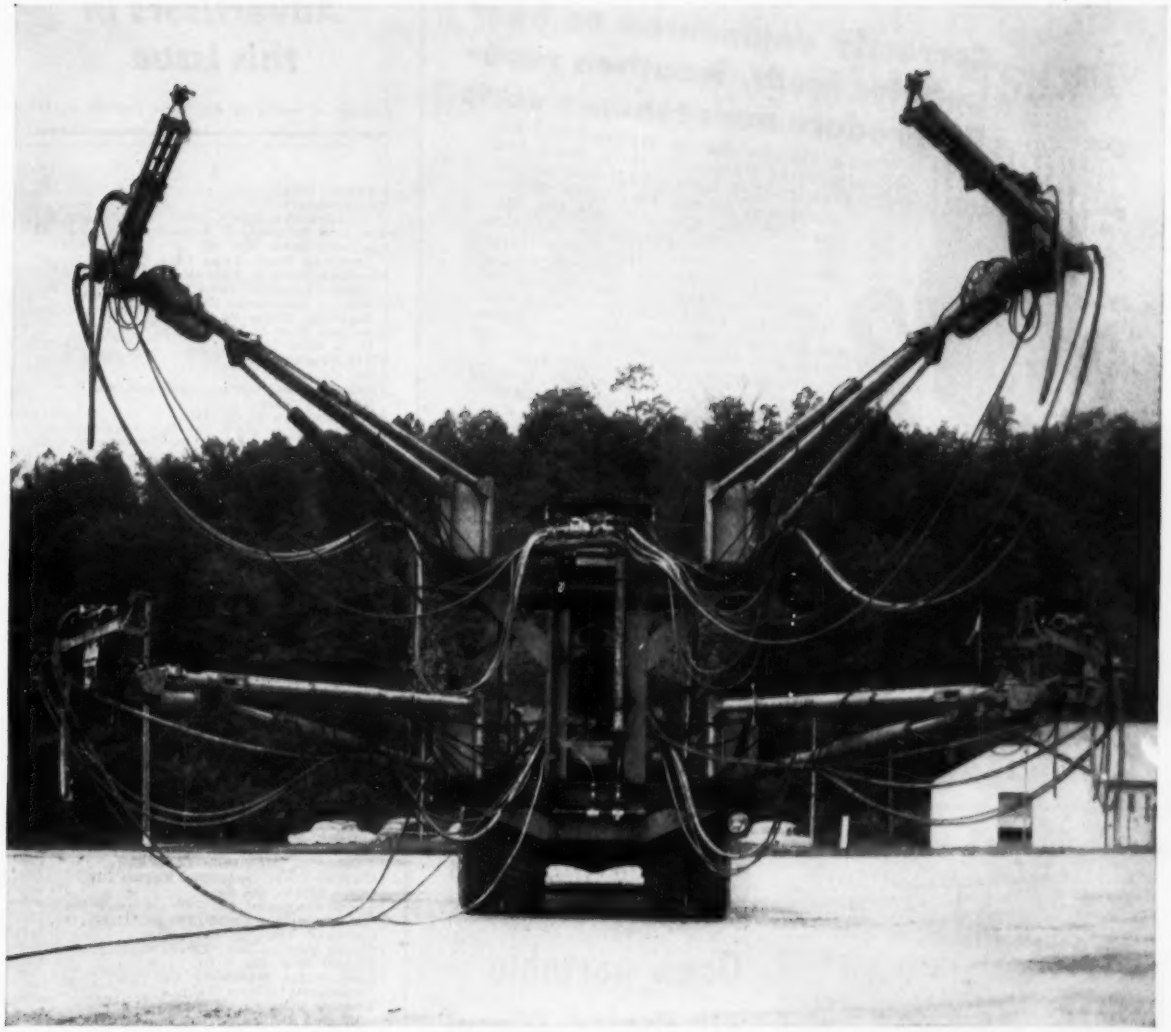
Equipment," the booklet covers shovels, cranes, cableways, drag scrapers, carrying scrapers, dozers, hoists, derricks, and clamshells. A discussion of wire rope construcion is also included.—**Macwhyte Co., Kenosha, Wis.**

ROPE DATA—Volume No. 5 of Union Wire Rope Corp's popular "Rope Dope" educational bulletins is now off the press. Since the first volume was offered more than 15 yr ago, Union has circulated more than a million copies to wire rope users. The new series is designed to aid the user in picking the right rope, also provide technical servicing information on proper handling, installation, and preventive maintenance techniques. — **Union Wire Rope Corp., Manchester Ave., Kansas City 26, Mo.**

CEMENT INTENSIFIER—A new bulletin describes the properties of Insuro, a liquid chemical emulsion that combines chemically with Portland cement to accelerate and hydrate cement particles. It is said to produce a stronger and more dense concrete, and to act as an effective anti-freeze agent. It is added to the mix as part of the gauging water. Insuro reacts only with Portland cement.—**Insuro Chemical Co., Inc., Box 249, W. Upton, Mass.**

HOIST LINE—A handy pocket-sized circular presents the complete CM line of hand and electric hoists and related overhead materials handling equipment. Included are illustrations, descriptions, and basic specifications on the various models of Lodestar, Comet and Meteor electric hoists; the Cyclone and Blue Boy hand hoists; the CM puller, and various types of CM cranes and I-beam trolleys.—**Chisholm-Moore Hoist Div., Tonawanda, N.Y.**

CORE DRILLING HANDBOOK—Publication of the second edition of a handbook on diamond core drilling has been announced by the Joy Mfg. Co. Entitled "Do's and Don't's for Diamond Core Drilling," this revised edition sets forth in simple terms basic techniques that apply to all types of diamond drilling. More than 200 operating tips are listed in the booklet, ranging from care of bits to the use of wrenches.—**Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.**



Head-on view of a 4-boom jumbo. Note wide reach of the Gardner-Denver hydraulic booms.

Build your own jumbo with

GARDNER-DENVER COMPONENTS

Tailor your truck, tractor or rail mounted jumbo with Gardner-Denver booms, feeds and drills. You get just what you need for each dollar invested. Gardner-Denver offers a wide selection in:

- **HYDRAULIC BOOMS,** completely automatic and remotely controlled for mounting on your jumbo.
- Manufactured in two sizes and types (tunnel and rugged types), TRIPODS for mounting heavier drifter equipment with the longer chain feed.
- **POWERFUL ROCK DRILLS** in 3-, 3½- and 4½-inch sizes. Long chain or screw feed mountings.
- **SECTIONAL DRILL RODS** and couplings for long-hole drilling. Gardner-Denver Ring Seal Shank.
- **REMOTE CONTROLS** located at any point along the boom or on the jumbo chassis. With G-D Remote Controls, one operator moves booms into position and controls complete drilling operation without leaving his station.

Gardner-Denver engineers will work with your staff and powderman to design your jumbo to the job.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois
Gardner-Denver Company, Export Division, 233 Broadway, New York 7, New York
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Correctly engineered to bear heavier loads, lengthen rope-life, reduce maintenance costs

• Because they're designed and engineered for specific tasks, you'll find MADESCO blocks with heavy steel shells and fittings your *safest* choice. In materials, in construction too, Madesco tackle blocks assure you the extra service that comes from over thirty years of specialized experience and "know-how." Buy Madesco blocks and you make substantial savings on your rope costs, because Madesco sheaves (of iron or steel graphite bronze) are correctly-grooved to prolong rope-life. Loads travel smoothly, easily, quickly to save lifting time; that means savings too that come from minimized maintenance and down-time. There's a complete line of Madesco tackle blocks for every need. Consult your industrial distributor—and meantime write for our catalog.

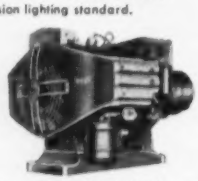
WORTH ASKING FOR—BY NAME

MADESCO BLOCKS

MADESCO TACKLE BLOCK CO., Easton, Pa.

Onan Model 5DRP mounted on trailer with extension lighting standard.

Series 3DSP, 3,000 watts, single-cylinder.



Series 5DRP, 5,000 watts, two-cylinder, opposed.

Cut lighting costs with

Onan portable air-cooled Diesel Electric Plants

Make substantial savings on any job where extensive night-lighting is necessary by using Onan Diesel-driven electric plants. Diesel fuel has a big edge in economy and it's readily available on job sites. Onan Diesel plants are built for rugged service, with extra-large bearing surfaces, Stellite exhaust valve seats and other long life features. Engine and generator are direct-connected . . . no belts or couplings. Air-cooling eliminates trouble from freezing or leaking coolants. Compact and light weight. Put an Onan Diesel Plant on your next job and check the savings.

Diesel Plants—3,000 and 5,000 watts.
Gasoline Plants—500 to 50,000 watts.

Write for folder

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

2871 University Ave. S.E., Minneapolis 14, Minnesota

Advertisers in this Issue

Number of copies of this issue printed 46,116

A

Aeroquip Corp. . . . 115
Allis-Chalmers (Construction Machy. Div.) 23, 185, 193, 311
American Bitumuls & Asphalt Co. . . . 22
American Bosch Div. of American Bosch Arma Corp. . . . 97
American Hoist & Derrick Co. . . . 282-283
(Crosby-Laughlin Div.) . . . 246
American Manganese Steel Div., American Brake Shoe Co. . . . 140
American Steel & Wire Div., U. S. Steel Corp. . . . 236-237
Athey Products Corp. . . . 2nd cover
Atlas Copco . . . 219
Austin-Western Works, Baldwin-Lima-Hamilton Corp. (Construction Equip. Div.) . . . 271

B

Badger Machine Co. . . . 138
Baldwin-Lima-Hamilton Corp. (Construction Equipment Div.)
(Austin Western Crusher) . . . 173
(Lima Works) . . . 242
Barber-Greene Co. . . . 92
Bay City Shovels, Inc. . . . 222
Beaver Pipe Tool, Inc. (Abrasive Machine Div.) . . . 223
Benton Harbor Engineering Works . . . 114
Bethlehem Steel Co. . . . 126, 280
Blaw-Knox Co. (Construction Equipment Div.) . . . 225
Boston Woven Hose & Rubber Co. . . . 50
Broderick & Bascom Rope Co. . . . 16-17
Bruning Co., Inc., Charles . . . 79
Bucyrus-Erie Co. . . . 203
Buffalo-Springfield Roller Div., Koehring Co. . . . 133
Bullard Co., E. D. . . . 44
Butler Bin Co. . . . 309
Butler Mfg. Co. (Oil Equipment Div.) . . . 49

C

Caterpillar Tractor Co. 15, 29, 69-72 (Incl.), 80-81
Chain Belt Co. . . . 6, 112-113
Chevrolet Motor Div., General Motors . . . 168
Chisholm Moore Hoist Div., Columbus, McKinnon Chain Corp. . . . 224
Chrysler Corp. (Industrial Engine Div.) . . . 199
Cities Service Oil Co. . . . 211
Clark Equipment Co. (Transmission Div.) 191
(Construction Machy. Div.) 164-165, 167, 169
Cleveland Trencher Co. . . . 285
Clevite Service Div., Clevite Corp. . . . 216
Clipper Mfg. Co. . . . 251
Construction Machinery Co. . . . 155
Continental Motors Corp. . . . 250
Crucible Steel Co. of America (Hollow Drill Steel Div.) . . . 256
Cummins Engine Co. . . . 143-154 (incl.)

D

D-A Lubricant, Inc. . . . 116
Dayton Sure Grip & Shore Co. . . . 281
Deere John (Industrial Div.) . . . 95
De Walt, Inc. . . . 121
Dixon Valve & Coupling Co. . . . 309
Douglas Fir Plywood Association . . . 224
DuPont deNemours & Co., Inc., E. I. (Textile Fibers Dept.-Nylon Tire Cord) 244

E

Eaton Mfg. Co. (Axle Div.) . . . 12
Economy Forms Corp. . . . 292
Eimco Corp., The . . . 3rd cover
Esso Standard Oil Co. . . . 21
Euclid Div., General Motors . . . 89, 206-207

F

Felker Mfg. Co. . . . 200
Ford Motor Company (Ford Div.) . . . 265-269
(Tractor & Implement Div.) . . . 42-43
Foster Co., L. B. . . . 4
Fram Corp. . . . 262
Fuller Mfg. Co. . . . 245

G

Gar Wood Industries, Inc. . . . 285-289
Gardner-Denver Co. . . . 305
Garrett Corp., The (AiResearch Ind. Div.) 302
Gates Rubber Co., The . . . 130
General Electric Co. . . . 243
GMC Truck & Coach Div., General Motors . . . 260-261
General Tire & Rubber Co., The . . . 255
Goodall Rubber Co. . . . 104
Goodrich Industrial Pdts. Co., B. F. . . . 40
Goodrich Tire Co., B. F. Div. The B. F. Goodrich Co. . . . 1
Gorman-Rupp Co. . . . 5
Gradall Div., Warner & Swasey Co. . . . 238
Gray Co., Inc., The . . . 249

Greenlee Tool Co. 300
Griffin Wellpoint Corp. 99
Gulf Oil Corp. ..... 33-36 (Incl.)

H

Harnischfeger Corp.
(Construction & Mining Div.) 208-209
Hobart Brothers Co. 274
Hobbs Corp., John W. 304
Homelite Div., Textron, Inc. 30, 31
Hough Co., Frank G. 296-297
Hyatt Bearings Div., General Motors 194
Hyster Co. 293

I

Insley Mfg. Corp. 58
International Harvester Co., Inc.
(Construction Equipmt. Div.) 100-101, 118-119
(Drott Div.) 220-221
(Farm Equipment Div.) 279
Iowa Mfg. Co. 32
Irvington Form & Tank Corp. 300

J

Jackson Vibrators, Inc. 284
Jaeger Machine Co., The 48
Johns-Manville
(Transite Sewer Pipe Div.) 290
Joy Mfg. Co. 27

K

Kelly Machine Div.,
Wiesner-Rapp Co., Inc. 299
Koehring Co. 134-135

L

Laclede Steel Co. 248
LaCrosse Trailer Corp. 131
LeRoi Div.,
Westinghouse Air Brake Co. 37
LeTourneau-Westinghouse Co. 52-53, 54-55, 56-57, 212-213, 215, 217
Lincoln Electric Co. 234
Link-Belt Speeder Corp. 18-19

M

Mack Trucks, Inc. ..... 105-110 (Incl.)
Macwhyte Co. 3
Madesco Tackle Block Co. 306
Magnetic Tool Corp. 292
Mall Tool Co.,
Div. Remington Arms Co., Inc. 93
Malabary Mfg. Co. 277
Manitowoc Engineering Corp. 96
Master Vibrator Co. 278
Maxon Construction Co., Inc.
(Manufacturing Div.) 291
McConnaughay, K. E. 281
McGraw-Hill Book Co. 286
McKiernan-Terry Corp. 304
Mid-Western Industries, Inc. 294
Miller-Tilt-Top Trailer Co. 218
Minneapolis-Moline Co. 162
Moretrench Corp. 265
Motorola Communications & Electronics, Inc. 272

N

Neenah Foundry Co. 292
Noble Co. 176-177
Nordberg Mfg. Co. 240-241
Northwest Engineering Co. 7

O

Oliver Corp., The 197
Onan & Sons, Inc., D. W. 306
Owen Bucket Co. 266

(Continued on page 309)

APRIL IS

USO

MONTH

A grain elevator gets a good going over, *INSIDE, OUTSIDE!*

COMPLETE BREAK-THROUGH IN WALL

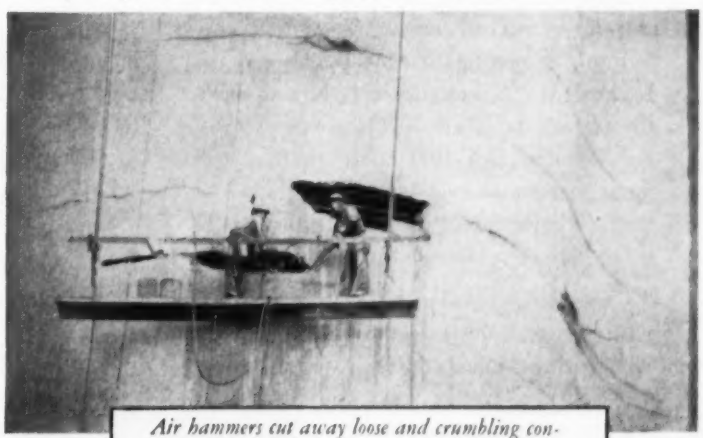
How to save this costly structure, without rebuilding sections, presented a serious problem.

Workmen on scaffolds, from inside and outside, cut out deteriorated concrete.

Necessity of costly forming was eliminated by the use of THORITE 20-minute set, nonshrink, filling and patching mortar.

THORITE

THORITE permits completion of job in one fall of scaffold, followed immediately by THOROSEAL seal coat.



Air hammers cut away loose and crumbling concrete. THORITE formed into cleaned-out sections, with a minimum labor cost, restored elevators to original condition.

Job completed with the application of THOROSEAL over entire structure.

Get our 16-PAGE CIRCULAR

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PA. • CENTERVILLE, IND.

A PRIME OUTLET FOR GOOD PUBLIC RELATIONS

and a desperately-needed public service

One of the most effective public relations jobs ever accomplished was achieved last year by hundreds of companies and individual businesses of every size.

These companies have been helping to sustain an advertising campaign that performs a desperately-needed public service: It shows the American people how to drive to stay alive. It also portrays the almost unbelievable fact that more than 40,000 men, women and children were killed in traffic accidents last year—and tells what to do to help stop highway homicide.

The campaign was prepared by a volunteer advertising agency in cooperation with The Advertising Council and The National Safety Council. But the over ten million dollars worth of time and space which carry the messages to the public was contributed by media owners or sponsored by business organizations, in the public interest.

Your own plans may readily permit the inclusion of such advertising—both from the view of the vital public service it would perform, and the incalculable good will it would promote for your name, your company, and your product or service.

To find out how easily your own program can tie in with this nationwide effort, and for the complete story on who, what, when and where, we sincerely invite you to write to The National Safety Council, Chicago 11, Illinois.

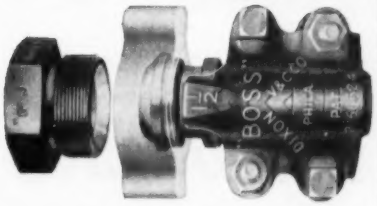
Published in cooperation with
The National Safety Council
The Advertising Council

Safest Connections for Pile Driver Hose

AND OTHER STEAM, AIR, WATER AND HYDRAULIC APPLICATIONS

"GJ-BOSS"

GROUND-JOINT FEMALE COUPLING STYLE X-34



The original *washerless* coupling that is unequalled for *safety* in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal...no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

COMPANION MALE COUPLING

"BOSS", STYLE MX-16

Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose . . . oversize hose not required. Coupling consists of I.P.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes ¼" to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

DIXON

Valve & Coupling Co.

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.

BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON

DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies

Buck Iron Company, Inc., Quarryville, Pa. · Precision Drawn Steel Company, Camden, N. J.

Advertisers Index

Continued from page 307

F

Patent Scaffolding Co., Inc. 39
Perfect Circle Corp. 85
Pioneer Engineering Div., Poor & Co. 158-159

Q

"Quick-Way" Truck Shovel Co. 10-11

R

Ramset Fastening System, Winchester-Western Div.,-Olin Mathieson Chemical Corp. 270
Raybestos-Manhattan, Inc. (Manhattan Rubber Div.) 82-83
Remington Arms Co. 295
Reo Motors, Inc. 188-189
Richmond Screw Anchor Co., Inc. 47
Rockford Clutch Div., Borg Warner 214
Rodgers Hydraulic, Inc. 301
Rogers Bros. Corp. 303

S

Safway Steel Products, Inc. 230
Schield Bantam Co. 259
Schramm, Inc. 179-184 (Incl.)
Seaman-Andwall Corp. 287
Sherman Products, Inc. 127
Sinclair Refining Co. 229
Smith & Co., D. B. 286
Smith Co., The T. L. 294
Spanall of the Americas, Inc. 24-25
Standard Dry Wall Products 307
Standard Oil Co. of Calif. 186
Standard Oil Co. (Indiana) 267
Stang Corp., John W. 298
Stow Mfg. Co. 273
Superior Concrete Accessories, Inc. 172
Symons Clamp & Mfg. Co. 2

T

Texas Co., The 8-9, 275
Thermoid Co. 161
Thew Shovel Co. 129
Thor Power Tool Co. 76
Timken Roller Bearing Co. 4th cover
Twin Disc Clutch Co. 276

U

Union Oil Co. of Calif. 123
Unit Crane & Shovel Corp. 26
United States Rubber Co. (Mechanical Goods Div.) 124, 247

(Continued on page 310)

for them around the world

April is USO Month

COMMENT from the BUTLER ENGINEER

Of a Revolution in Concrete Paving!

Never, no never have we seen the excitement and intense interest shown at the Road Show in the new Butler TX-4 Road Builders Plant. Our deep thanks to every one who visited the Butler Exhibit!

The TX-4 is an entirely new concept in absolutely unprecedented heights of concrete production — designed greatly to *accelerate* the Multi-Billion Dollar Highway Program.

Planning for concrete paving has been generally concerned with batching facilities to match two dual drum pavers — *but the Butler TX-4 will easily handle FOUR!* . . . even more if batch trucks can keep up.

The contractor's entire approach to paving will be seriously re-evaluated in the light of the Butler TX-4. Costs will be drastically cut . . . and so will paving schedules.

The TX-4 apart from its gigantic batching capacity is ultra portable. No other plant approaches it in dismantling, shipping and erection simplicity.

The TX-4 is completely automatic — batches 4 batches each of 2 sizes of stone, 4 batches of cement and 4 batches of sand — simultaneously — and with ONLY ONE OPERATOR!

But is the TX-4 only for the large contractor? Most emphatically, "No!" The contractor with just one paver can buy the Basic Unit *at less cost than conventional one-paver plants.* Just 2 bins (one compartmented for coarse and fine stone and the other for cement and sand).

So whether you're big or not, the BUTLER TX-4 is *your* plant. It can be made to meet every production requirement —one paver, two, three or four.

You start moderately — and grow with BUTLER.

The Butler Engineer

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT USED OR RESALE

UNDISPLAYED —RATES— DISPLAYED

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Positions Wanted undisplayed advertising rate is one-half of above rate payable in advance.

Box Numbers—count as one line.

The advertising rate is $18.00 per inch for Equipment & Business Opportunity advertising appearing on other than a contract basis. Contract rates quoted on request.

Employment Opportunities—$26.00 per inch, subject to Agency commission.

An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

Send New Advertisements and inquiries to Classified Adv. Div. CONSTRUCTION METHODS & EQUIPMENT, P. O. Box 12, N.Y. 36, N.Y. April issue closes March 28.

When You Need
LOW COST—DEPENDABLE
INDUSTRIAL RUBBER PRODUCTS

call CARLYLE

FOR ALL YOUR REQUIREMENTS OF

RUBBER HOSE

Air, Acid, Paint Spray — Solvent Welding, Pile Drive — Discharge Fire, Fuel Oil — Oil Suction & Discharge, Gasoline — Suction Water, Steam — Vacuum Pneumatic, Road Builders

RUBBER BELTING

Conveyor Elevator — Grader Chute Lining — Hot Material Mucker — V-Belts Transmission

PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

CARLYLE RUBBER CO., INC.

103-107 Warren St., New York 7, N. Y. Digby9-3810

TANK TRAILERS

Used—For Sale or Lease, Chicago Area

25 tandem axle gasoline, fuel-oil and LPG trailers with capacities from 5200 gallon to 7900 gallon. Priced from $2000.00. Write, wire or phone.

BUTLER MANUFACTURING COMPANY
Suite 1110, 624 S. Michigan Ave., Chicago 5, Ill.
Phone WEbster 9-5635

TANK TRAILERS

Used—For Sale or Lease, Birmingham Area

8 single axle and tandem axle gasoline and fuel-oil trailers with capacities from 4000 gallon to 7400 gallon. Priced from $700.00. Write, wire or phone.

BUTLER MANUFACTURING COMPANY
931 Ave. "W", Ensley, Birmingham 8, Ala.
Phone 6-5181

TIRE SPECIALS

750/20	900/20	1100x24
Used Tire, Tube, Flap	Used Tire, Tube, Flap	12 Ply New
$17.50	$24.95	$95.00

Tractor • Truck
Earth Mover • Army Surplus
Passenger • Aircraft
Wholesale Prices
SEND FOR FREE CATALOG

Duddy's

152 No. Beacon St. Boston, Mass. — Post Office Box 846 Phoenix, Arizona

TANK TRAILERS

Used—For Sale or Lease, Minneapolis Area

30 tandem axle gasoline and fuel-oil trailers with capacities from 6400 gallon to 7900 gallon. Priced from $1600.00. Write, wire or phone.

BUTLER MANUFACTURING COMPANY
900 Sixth Ave., S.E. Minneapolis 14, Minn.
Phone FEderal 3-8111

TANK TRAILERS

Used—For Sale or Lease, New York Area

40 single axle and tandem axle gasoline, fuel oil, asphalt and LPG trailers with capacities from 4000 gallon up. Priced from $600.00. Write, wire or phone.

BUTLER MANUFACTURING COMPANY
Suite 602, 103 Park Ave., New York 17, N. Y.
Phone MUrray Hill 3-9473

Somebody—Somewhere,

needs your idle equipment! Reach that buyer quickly and economically thru the

"SEARCHLIGHT SECTION"

The meeting place of Used Equipment Buyers and Sellers

Advertisers Index

Continued from page 309

Universal Atlas Cement Co. 73
Universal Form Clamp Co. 226
Universal Mfg. Corp. 235

V

Vermeer Mfg. Co. 249
Vickers, Inc.
(Div. Sperry Rand Corp.) 139

W

Waukesha Motor Co. (Railway Div.) 20
White Mfg. Co. 274
Whitehead Stamping Co. 196
White Co., David 286
Wickwire Spencer Steel Div.,
Colorado Fuel & Iron 88
Willys Motors, Inc. 192
Wisconsin Motor Corp. 38
Work Bulls Div.,
Massey-Harris-Ferguson, Inc. 232-233

Y

Yale & Towne Mfg. Co., The
(Yale Materials Handling Div.) 75

■

CLASSIFIED ADVERTISING
F. J. Eberle, Business Manager

Equipment
(Used or Surplus New)
For Sale 310

Construction Methods AND EQUIPMENT

330 West 42nd St., New York 36—LO 4-3000

E. E. WEYENETH, *Advertising Sales Manager*

Member of Associated Business Publications and Audit Bureau of Circulations

Sales Representatives

New York 36, 330 W. 42nd St.
R. H. LARSEN

Philadelphia 3, 17th and Sansom Sts.
L. S. KELLY, JR.

Atlanta 3, 1301 Rhodes-Haverty Bldg.
DOUGLAS C. BILLIAN

Cleveland 15, 1510 Hanna Bldg.
W. E. DONNELL

Chicago 11, 520 N. Michigan Ave.
H. J. MASUR, JR., D. J. McGRATH
J. L. RICE

Dallas 1, The Vaughn Bldg., 1712 Commerce St.
GORDON JONES, EDWARD E. SCHIRMER

Los Angeles 17, 1125 West Sixth St.
H. L. KEELER

San Francisco 4, 68 Post St.
J. W. OTTERSON, R. C. ALCORN

London, E.C. 4, 95 Farringdon St.
McGraw-Hill Publishing Co., Ltd.
HERBERT LAGLER

Other Sales Offices:
Detroit 26: 856 Penobscot Bldg.
St. Louis 8: Continental Bldg.
Pittsburgh 22: 738 Oliver Bldg.
Boston 16: 350 Park Square Bldg.

"EASIER LOADING *than any others we tried*"

That's what operator Clarence Grasse says about the Allis-Chalmers TS-260 he operates on a cut-and-fill road job near Waubeka, Wisconsin.

It's the curved bowl bottom and offset cutting edge design that make the TS-260 easier to load. Dirt "boils" through the center of the load, keeps the load live, fills the bowl with 14-yard heaped loads time after time.

On road jobs like this one, the TS-260's short turning radius—a complete turn in only 30 ft—eliminates need for extra travel-to-turn areas, shortens cycle time, gets job done faster, easier.

Maneuverability and full-capacity loading are only two of many advanced-design features that make the TS-260 motor scraper outstanding in performance and dependability. See your Allis-Chalmers dealer for the full story now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

Methods Memo . . .

Asphalt's Answer

J. E. Buchanan, president of The Asphalt Institute, has some harsh things to say about the way the Air Force conducted its recent test to determine the relative merits of asphalt and portland cement runway pavements on heavy bomber airfields (CM&E, Dec., 1956, p. 12).

The tests, Buchanan says, were "unrealistic" and their results "invalid." He charges that the asphalt test pavement was improperly designed.

"In plain language," said Buchanan, "the simple fact seems to be that the asphalt mix used in the test section at Kelly Air Force Base was too rich in asphalt content for the conditions. Anyone who knows the rudiments of asphalt paving technology knows how an over-rich mix will behave. This is what happened at Kelly. Normal procedure would have been to modify the mix, making it leaner, and then re-testing."

The test compared the two types of pavements under simulated repeated loadings of heavy aircraft—a load of 100,000 lb. Test procedure called for 30,000 round-trip tandem-rig load repetitions of dual-wheel landing gear. The asphalt pavement became badly rutted before completion of the test, but the concrete showed no signs of deterioration.

Buchanan said the conditions of the test called for a six-fold increase in the standard coverages for the concrete section but subjected the asphalt section to an increase of 20 times the regular test traffic under consistently hot pavement conditions.

"For such an unprecedented and unrealistic test pattern," he said, "there should have been a proportionate reduction in the asphalt content of the paving mixture, a fact which was recognized by the Corps of Engineers but they were powerless to act under the terms of the test imposed by the Air Force.

"We know that actual bomber traffic is not all concentrated in midsummer heat on newly constructed pavements designed for year-round use."

Progress in Safety

Last year was the safest year in history on jobs handled by members of the Associated General Contractors of America. A total of 3,260 AGC firms —nearly half the membership—reported a decline in both the number and the severity of accidents.

In 1956, AGC firms reported an average of 29.6 accidents and 2,826.2 days lost per million man-hours worked. In 1955, the rates were 35.6 accidents and 2,851.6 days lost per million man-hours worked.

So AGC firms had six fewer accidents last year than in 1955 for the same amount of hours worked. And there were 25 fewer days lost for each accident in 1956.

Preliminary figures from the Department of Labor indicate that the accident frequency rate for all types of construction also may be slightly lower in 1956 than it was in 1955.

And Look at This Record

Contractors working on Army Engineer projects in the Missouri Basin also racked up an enviable safety record. Some 8,000 contractor employees in nine states worked 16,000,000 man-hours without a single fatality.

Much of this work was in the high hazard category. It included work on dams, powerhouses, air bases, arsenals, river improvements, and other projects valued at $153 million.

Army Engineers credit the record to advance safety planning. Safety requirements were incorporated into the general and special conditions of all contracts. The Army required a written safety plan from each contractor, and the contracting officer reviewed and approved these plans before the start of work. Pre-construction safety conferences and periodical safety meetings also are required.

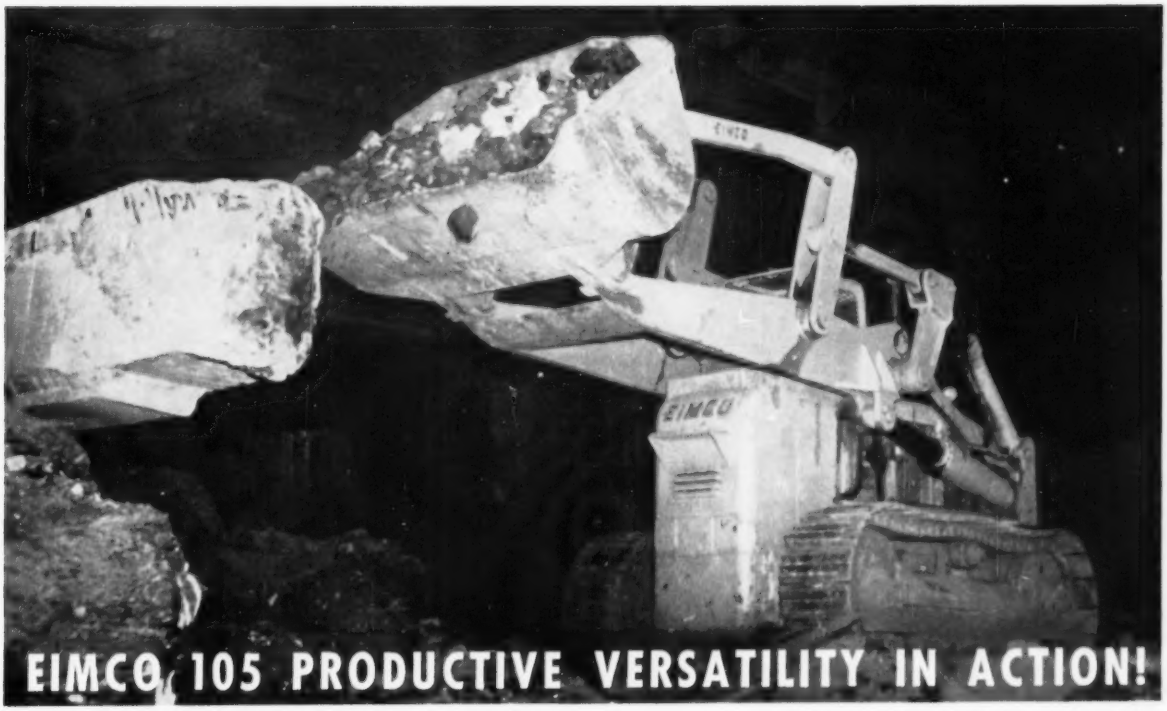
Our West Coast Editor

We're proud that Larry Wise, whose stories from the West Coast are a feature of every issue, has been selected as one of the 10 outstanding young engineers of the San Francisco area. Awards were made to the chosen 10 during Bay Area Engineers' Week. Larry's scroll reads, ". . . in recognition of his outstanding contributions to the comfort, welfare, and security of the Bay Area and its residents through distinguished engineering services."

Tool of the Roadbuilder

This photo of construction on a four-lane superhighway project near Madrid, Spain, comes to us from a friend with LeTourneau-Westinghouse who writes:

"I don't know who built the roller, but it isn't ours. As for the prime movers, we didn't breed them either. I wish we had—we could have called them 'Tournabulls.' "



EIMCO 105 PRODUCTIVE VERSATILITY IN ACTION!

NEW! FRONT END LOADER

Here's the latest addition to the 105 wide-range family of rugged earth-moving tools.

In loading applications where physical and haulage conditions make its use more practical . . . here is a front end loading mechanism that gives you extra strength for the most severe job.

Large, double-acting hydraulic boom cylinders provide ample power to hoist loads weighing up to 15,000 lbs. to full height. Boom and bucket controls may be operated simultaneously.

To fill the big (2½ yard) bucket, this loader develops 25,000 lbs. digging force at the lip. 40,000 lb. pry-out force and 40 degree bucket tip-back at ground level gets full bucket loads, minimizes spillage. It carries loads close and low for maximum stability.

It operates in 9' 6" headroom . . . discharges into haulage units up to 14'.

Exclusive features of the hydraulic system provide an extra margin of protection against mechanical delays.

Bulldozer

Dozer blade attachments are designed to make full use of the extra-production features of the 105. In broad usages such as cutting haul roads for logging outfits . . . pioneering in shale and hard rock . . . clearing fire paths for the Forest Service . . . the Eimco 105 Bulldozer has proven its high-capacity ability the world over.

All attachments are Eimco-built to standard SAE mounting dimensions for the basic 105 Tractor. This means extra performance from every attachment through independent track maneuverability . . . up front visibility . . . power shift operating ease . . . balanced design for maximum stability . . . quality built for dependable on-the-job service.

Excavating Loader

Where digging is extra tough . . . and haulage provisions can be adopted to take full advantage of overhead discharge — the time-proven 105 Excavating-Loader will give you **bonus** loading power at the bucket lip and **bonus** dumping speed to accelerate the entire cycle.

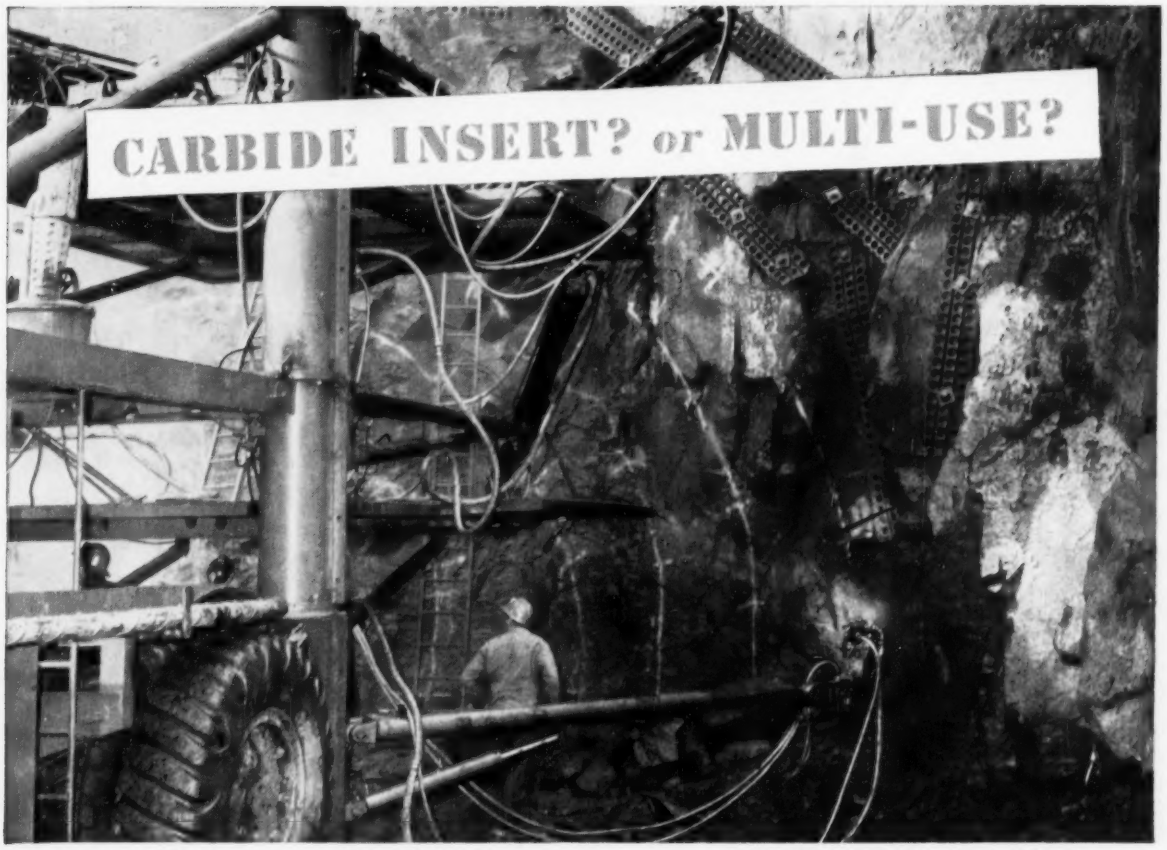
Unique contour of the rugged rocker arms . . . bucket design and smooth, steady flow of engine power transmitted to the bucket lip through the torque converter gets 39,200 lbs. of digging force right where you want it . . . in the pile. Awkward maneuvering to get into dumping position is eliminated in ideal overhead discharge applications.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-239



LOCATION: Mayfield Dam site, near Saukum, Washington. **OPERATING CONDITIONS:** Medium blocky basalt.

Increased drilling speed with TIMKEN® carbide insert bits saves time, labor on Mayfield Dam tunnel

DRILLING a diversion tunnel for the city of Tacoma's Mayfield Dam, Gibson and Roberts, rock drilling specialists of Yardley, Washington, had to chew through medium blocky basalt. For highest economy drilling through this hard ground, they used Timken® carbide insert rock bits with their jumbo drill rig.

Timken carbide insert rock bits permitted high speed drilling with fewest bit changes. With Timken bits the ground was drilled and blasted in one shift.

Under many tough drilling conditions, you can get top economy with Timken carbide bits. But carbide insert bits may not be best for every job.

In softer, less abrasive ground, Timken multi-use bits, correctly controlled and reconditioned, give you the lowest cost per foot-of-hole when you can drill out full increments of drill steel.

Whether your drillers use Timken multi-use or Timken carbide insert bits, they will save time because these bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. You can change bits right on the job, as fast as the ground changes. What's more, Timken rock bits are made from our own electric furnace fine alloy steel. And they have a specially developed shoulder union that protects threads from drilling impact.

To find out which type of Timken rock bit will do the best job for you write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit ... for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.